

COMPUTERWORLD

'Infobahn' camps split

By Gary H. Anthes
WASHINGTON

Two computer industry factions have squared off over concerns about interoperability on the emerging information superhighway. Each side claims that its version of a Senate bill to overhaul telecommunications regulation will better serve users.

The factions are lobbying to influence language in the proposed Communications Act of 1994. The House approved its version of the measure in June, setting the stage for the deregulation needed to grease the skids of the National Information Infrastructure [CW, July 4]. The

Senate version is on hold until early next year.

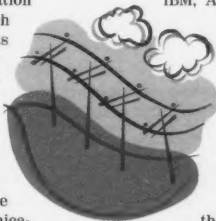
Pitted against one another are a group that includes Sun Microsystems, Inc., Oracle Corp. and 3Com Corp. and a coalition that includes IBM, Apple Computer, Inc. and Microsoft Corp.

The latter coalition is led by the Computer and Business Equipment Manufacturers Association and two other trade groups.

At issue is whether the communications bill will steer the NII toward completely open interfaces and systems or in a direction that encourages proprietary interfaces, closed systems and, potentially,

Info highway, page 149

As legislative debate heats up over how to open up the information superhighway, two issues stand out: how to ensure interoperability and what role the government should take in regulating interface standards for data exchange.



Mobile users to get host PC link

By Jaikumar Vijayan

The untethering of the computer user continues.

Imagine roaming around your company and being able to remotely log in to your PC, access files, input and manipulate data, download spreadsheets and exchange electronic mail with other LAN users — all using just a small handheld wireless slate.

Zenith Data Systems will start shipping those capabilities next month in the form of a unique, tablet-size mobile device that reportedly will let mobile users hook directly to a host PC or server in a

LAN, according to sources briefed by the company. Users will be able to input data and transmit queries as well as get real-time feeds from the desktop host.

Zenith Data confirmed that it will announce such a product shortly.

The pen-based, high-performance wireless LAN product can be carried around in a campuswide setup. It will allow users to get high-throughput connectivity to host desktops on client/server and peer-to-peer networks on a variety of network operating systems and wired protocols, sources briefed on the product said.

Mobile users, page 149

Gays at home in high tech

By Ellis Booker

"It's just the sort of thing you'd expect to find in Silicon Valley: a social club for gay nerds," joked Greg Hullender, a software design engineer at Microsoft Corp.

Hullender is a member of High Tech Gays, a decade-old support group in San Jose, Calif. More than 50% of the group's 500 members work in the software, computer hardware and networking professions, according to A. J. Alfieri, president of the group.

The visibility of gays in the high-tech field is reflected by the large number of computer

and software companies that have recognized gay employee support/liaison groups or have openly gay senior executives.

Overlooked Opinions, Inc., a Chicago-based market re-

search firm specializing in gay and lesbian issues, estimates there may be 10 times as many gays working in the computer industry as in the fashion industry.

Many gays confirm the impression that the high-tech field has received them more warmly than have other sectors of the business world. "I can't think of another industry that is

Gays, page 28



Digital Queers members Karen Wickre (left) and Tom Rielly

Banyan sites wrestle with price changes

By Lynda Radosevich

Banyan Systems, Inc. officials are likely to get an earful about Vines network prices from users at their annual conference this week, despite claims by the company that the controversy over pricing changes has died down.

According to a *Computerworld* survey of 50 Banyan users last week, only a sliver of them believe the new pricing scheme will lower their costs (see chart page 16). However, most users are still in evaluation mode.

Large users lose out

The changes, announced last May and due to take effect this month, will mainly address the number of licenses sold at one time. Previously, Banyan sold Vines in 5-, 10-, 20- and unlimited-user bundles. The new scheme runs in 10-, 20-, 100- and 250-user license packages.

But there is no provision for unlimited licenses, leaving large users hanging. "What if I want to run 300 users? I'm in sad shape. It's not trivial," said Larry Stouder, manager of technical development at Continental Grain Co. in New York.

"They tried to move to a differ-

Banyan, page 16

BackOffice costs startle customers

By Stuart J. Johnston and Lynda Radosevich

Users and analysts disagreed last week on whether Microsoft Corp.'s introduction of a server suite — including a drastic change in server software pricing — is an innovative move that will transform client/server computing or merely a maneuver that will just cause trouble.

Announcement of the BackOffice suite has been anticipated since company officials acknowledged plans for it in June. It bundles Windows NT Server 3.5 with SQL Server, Systems Management Server, SNA Server and Microsoft Mail.

Although a rise in NT Server pricing had been expected, the switch from an unlimited-user to a per-user pricing scheme complicates plans at large corporate sites and may discourage some from buying the product.

"We're tossing up whether we want to shift to NT," said Kevin Cummuta, manager of IS operations at U.S. Cellular Corp. in Chicago. "If we did, this would definitely slow the

BackOffice, page 16



RE-ENGINEERING

Moving MOUNTAINS

Shifting applications from proprietary platforms to distributed environments is one tough job. Find out about products that can help in the CW Guide to Re-engineering Tools. Page 106. Business process re-engineering itself is under scrutiny. See In Depth's Sound Off. Page 118.



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THE CLIENT/SERVER



SHUFFLE

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stay in step
chairs, while many IS
when a company
professionals remain players,
moves to
many find themselves
client/server.
scrambling for a seat.

See Management, page 97

NEWS

■ After lobbying from users, IBM promises to enhance the Data Interpretation System (DIS) decision-support software as its Metaphor subsidiary is folded. But much of DIS will eventually be replaced by IBM technology. *Page 6*

■ Widespread implementation of the Desktop Management Interface could turn the software industry on its ear. For example, vendors may be able to offer per-user pricing. *Page 12*

■ Legal issues (not technology) stand in the way of widespread use of the information highway application called **telemedicine**. *Page 18*

COMPUTER INDUSTRY

■ Compaq CEO Eckhard Pfeiffer's recent outburst against Intel during an industry conference in Spain is the first public vocalization of simmering discontent between the companies. *Page 33*

DESKTOP COMPUTING

■ First Union National Bank has deployed nine commercial and imaging applications under OS/2. The bank now has approximately 6,000 OS/2 desktop systems. *Page 39*

WORKGROUP COMPUTING

■ Bull Worldwide Information Systems co-developed IBM's symmetrical multiprocessing servers. But Bull beat IBM to the punch and recently announced its version of the Unix machine. *Page 69*

ENTERPRISE NETWORKING

■ Although Cisco supports Hewlett-Packard's 100VG-AnyLAN technology, IS shops are approaching it with caution. *Page 75*

LARGE SYSTEMS

■ Integra Financial Corp.'s integration of its nascent optical storage subsystems with its direct-access storage devices represents a growing trend among companies that are attempting to leverage the benefits of a multimedia approach. *Page 88*

APPLICATION DEVELOPMENT

■ It may lack the slime and gore of Godzilla vs. The Thing, but Oracle

and Sybase are set to battle each other for a potentially monstrous **database connectivity** market. *Page 93*

IN DEPTH

■ Paul Strassmann and Brian Reynolds debate the best approach to **re-engineering**. *Page 118*

CAREERS

■ Joseph Pollizzi pulls together a team for an **object-oriented development project** at the Space Telescope Science Institute in Baltimore. *Page 124*

MARKETPLACE

■ For companies **re-engineering legacy applications**, the decision to buy or build often comes down to what's *not* available in shrink-wrapped software. *Page 137*

MANAGEMENT

■ Looking for a top IS spot at an innovative company? Check out the CIO vacancy at Portland, Maine's Unum Corp. But if you make the trip north, make sure you're customer-driven, cost-conscious and content to follow a precharted IS course. *Page 101*

COMMENTARY

■ Charles Babcock says huge benefits may loom beyond the pitfalls of getting into parallel processing. *Page 6*

■ Bill Laberis offers advice to the federal government about butting into and out of policy matters on the national infobahn. *Page 34*

■ John Gantz warns users about the hidden costs in buying software as suite bundles. *Page 35*

■ Michael Sutton says you need to know what a LAND mine is before you step into client/server. *Page 35*

Calendar..... *Page 104*

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Sept. 23 Stock Ticker *Page 147*

How to contact Computerworld ... *Page 150*

Executive Briefing

Hewlett-Packard wins a few, loses a few. Customers complain about quality problems with some products as HP launches a campaign to woo AS/400 users away from IBM. Meanwhile, HP discontinues its Kittyhawk disk drive and unveils a data conferencing device that lets users talk on the phone while viewing and updating the same document. The company also takes the code of silence off the next release of its HP/UX operating system. *Pages 4, 14, 15, 40 and 70*

New on the 'net: browsers from Novell and others; built-in hooks to the Internet from the upcoming version of OS/2; debates about how to best provide interoperability; and users and vendors outline a framework for electronic commerce. *Pages 1, 8, 24 and 78*

Microsoft promises 32-bit NT applications will ship within a month of Daytona, as it finally formally introduces its BackOffice software suite. *Pages 1 and 39*

New and old players are joining the client/server software fray. Manufacturing packages are appearing every quarter it seems, while Oracle is taking its applications business much more seriously, and SAP and Dun & Bradstreet Software simplify pricing. *Pages 4, 12 and 85.* On the applications development front, Forte introduces high-end tools, and Sybase cans its repository. Also, how to decide whether to buy or build those new applications. *Pages 10, 93 and 137*

Remote computing developments: Zenith will soon introduce a device to remotely access and manipulate files; customers discuss how to most effectively manage remote users dialing into the LAN; and short-term career opportunities are available for remote-computing experts. *Pages 1, 69 and 125*

Lotus buys Edge Research for its Notes applications development tools and unveils its Notes "Lite" version in an effort to hold on to its groupware lead. *Pages 33 and 75*

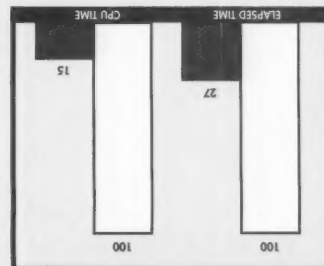
IBM announces new versions of VM and VSE, while third-party object-oriented applications ship for the AS/400. *Pages 85 and 88.* Meanwhile, Digital plans to announce new software versions and a simplified licensing strategy. *Page 14*

The 5th Wave by Rich Tennant



"THE LCD DISPLAY WAS GOOD. PLASMA DISPLAYS WERE A LITTLE BETTER, BUT WE THINK THE LIQUID LAVA DISPLAY THAT JERRY'S DEVELOPED IS GONNA ROCK THE WEST COAST!"

PERFORMANCE



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FUNCTIONS

UNIX System Sort	SyncSort
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Fixed length binary	NO
Variable length binary	NO
ASCII load	YES
RECORD PROCESSING	
Selection	NO
Reformatting	NO
Summation	NO
Grouping	NO
COLLATING SEQUENCES	
Standard ASCII	YES
EBCDIC	NO
User Defined	NO
Multi-byte	YES

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UNIX

The UNIX System Sort



HP faces delivery, quality music

Users shock executives with reports of server, workstation failures

By Mark Halper
DENVER

Hewlett-Packard Co. executives were deftly fielding questions at a national user conference here last week when an unfamiliar complaint surfaced. Some users said quality assurance seems to be slipping.

At a packed session of about 800 users and vendors, Diane Shaw, a systems engineer at United Air Lines, told HP officials that United has experienced processor and bus failures on newly arrived equipment during the past 10 months. The problems turned up in systems ranging from HP's largest Unix system, the HP 9000 Model T500, to Unix workstations.

"We hope it's not the start of a trend," said Michael McClure, a technical leader at Martin Marietta Corp.'s aerospace operations in Orlando, Fla.

McClure reported similar problems on a T500 and other servers and workstations. HP remedied the problems within 24 hours with on-site service, he added.

Cream of the crop

Although all computer vendors are beset by some failures, HP has historically traded on its rock-solid quality reputation so even a slight reversal would be disturbing, said Robert Herwick, an industry analyst and president of Herwick Capital Management in San Francisco.

Shaw's remarks prompted moderator Jane Copeland, chairwoman of the advocacy committee for user group Interex, to ask the audience how many had experienced similar difficulties.

Sounds of surprise filled the room as some 20% to 30% raised their hands, momentarily silencing a group of HP panel executives, including Rich Sevcik, general manager of systems and servers.

Afterward, Sevcik said he was shocked that so many users indicated problems because a recent HP survey showed customer satisfaction had improved over already high levels. "We need to go do some digging," Sevcik said.

In a midrange computer survey earlier this year by Datapro Information Service Group in Delran, N.J., users gave the proprietary HP 3000 minicomputer a 4.6 reliability rating on a scale of 1 to 5, with 5 being the best. The 3000 tied with IBM's AS/400, another proprietary system, for the top spot.

In Unix systems, HP led the pack with a 4.4 rating. Copeland, who is also president of API International, an Austin, Texas, system management firm, said the unusual number of quality concerns could stem

from the increasing attendance at the conference by HP Unix users because many consider Unix systems to be less reliable than proprietary systems.

One item that seems to be failing for both HP 9000 and HP 3000 users is SCSI drives. An HP 3000 user at a large manufacturing site, who asked not to be identified, said the "infant mortality rate" on HP redundant arrays of inexpensive disks (RAID) is about 10% to 15%. The user attributed the problem to complications with the array's SCSI controller.

Drive problems with RAID and digital audio tape devices hit Knight-Ridder, Inc.'s financial services group in Kansas City, Kan., where five RAID drive mechanisms failed in the past seven months, said Michael Daugherty, communications manager. HP told him the problem was in the array's backplane.

Daugherty said he still gives HP high marks for quality. He said that rising reports of failures could be linked to an increase in HP sales.

HP to discontinue disk drive family. See page 40.

Unix on the rise

Early indications were that Unix attendees outnumbered MPE/iX attendees for the first time in the history of Interex, a conference spokeswoman said last week.

Order-fulfillment overhaul under way

By Mark Halper
DENVER

If Hewlett-Packard Co. is springing a leak in quality assurance, users and HP executives at Interex '94 conference last week said it has begun plugging a geyser in order fulfillment.

Since March, the average time between when a customer orders a product and installs it has plummeted from 45 days to 20 days, Wim Roelandts, HP's senior vice president of computer systems, told customers in a keynote speech. HP has been delivering its newest workstations and servers within 10 days, he said.

Top of the list

Overhauling an ancient order-fulfillment system has been a top priority of HP Chief Executive Officer Lewis Platt for more than a year. Users have been bedeviled not only by long waits but also by convoluted order forms and processes and improper configurations [CW, July 11].

An HP 9000-based on-line price quote and configuration system, called Conquest, has largely contributed to the delivery improvements, said Dick Love, HP's vice president of computer order fulfillment and manufacturing. The system links HP's sales staff and resellers.

With characteristic candor, Love cautioned that HP "still has a long way to go." A more complete version of Conquest, called Watson, will not be in place until 1997, he said. It will be available on-line to end users who order it and it will provide enhanced security. Details have not been worked out.

Richard Postmus, a project leader for corporate information systems at Knight-Ridder, Inc. in Miami, said that in the meantime he would like to see HP provide a CD-ROM version of the price and configuration guide. Love said he would investigate that possibility.

At Martin Marietta Corp. in Orlando, Fla., technical leader Michael McClure said he has noticed significant improvements in HP's delivery time.

Oracle seeks to shift app business into high gear

By Kim S. Nash and Rosemary Cafasso

More demanding client/server users, combined with fierce competition from SAP America, Inc. and others, have forced Oracle Corp. to take its applications business much more seriously these days.

Moreover, the Redwood Shores, Calif.-based company now realizes that it cannot pick up momentum without working much harder, users and analysts said last week.

More emphasis

"The time has come for [Oracle] to really put some effort into their apps business," said Ed Black, a senior analyst at Aberdeen Group in Boston. "The results to date have been somewhat disappointing. A \$2 billion company with the presence and leverage they have really should be doing better."

Oracle pulled down \$239 million in all application sales for fiscal 1994. SAP, meanwhile, reported \$665 million in worldwide mainframe and client/server sales last year. "It's really a race between us and SAP, and with all the shifts we're making... we think we have just put ourselves two years ahead of them," said Greg Brady, vice president of worldwide applications marketing at Oracle.

Brady referred, in part, to a piece of Oracle's revamped strategy to team with competitors — including Dun & Bradstreet Software in Framingham, Mass. — in re-

seller deals. Also, Oracle last week said that it had bought a 15% equity stake in Datalogix International, Inc., a \$25 million manufacturing software maker. The pact, which marks Oracle's first purchase of a piece of another firm, is aimed squarely at SAP, Brady said.

Neither SAP nor Oracle has its own process manufacturing package — software that caters to chemical, pharmaceutical and other nonindustrial manufacturers. Now, Oracle will resell Datalogix's Global Enterprise Manufacturing Management System (GEMMS) application worldwide. SAP has vowed to release a product, and while it did not comment specifically on those plans, a spokeswoman said SAP would have "plenty to say with Release 3" of R/3, which is scheduled for next year.

The manufacturing applications market is ramping up as users seek to replace older homegrown and proprietary systems, noted Tony Friscia, an analyst at Advanced Manufacturing Research in Boston. Oracle, via the GEMMS package, "finally has a competitive solution," he added (see story page 85).

Oracle is considering other equity deals, Brady said, but he declined to specify possible partners.

Such newfound partnering verve could hurt rivals, observers said. "Parts of [Oracle's] product line are good, others are not. They've decided to work with other vendors rather than do it all their own," said Clare Gilman, an analyst at International Data Corp. in Framingham, Mass.

Plus, the company plans to reveal several significant changes in the applications group next month, according to a source inside Oracle. Those changes include the following:

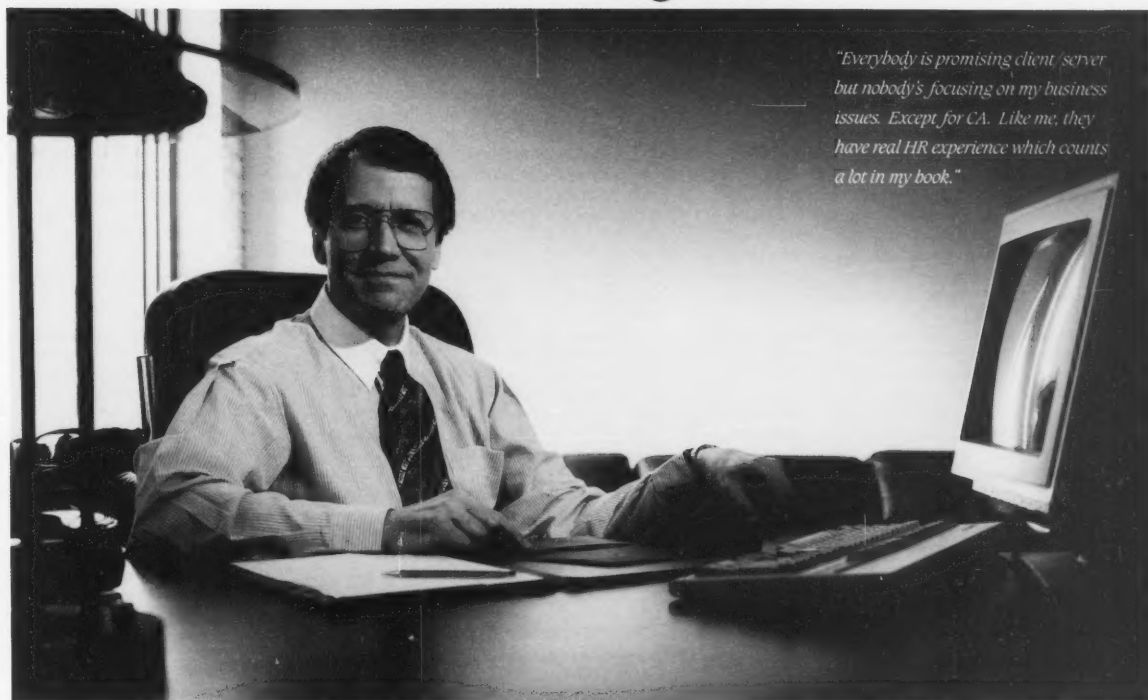
- The high-profile Oracle Industries consulting service, unveiled 14 months ago, will merge with the applications group.
- A "deployment pricing" structure will roll out next month under which users pay Oracle in stages as portions of a system are deployed instead of paying for all products up front.
- Oracle Media Server is expected to be integrated with the applications to lend multimedia support.

Yet despite promised improvements, Oracle stands to lose some client/server business for good. Tampella Power, Inc. in Williamsport, Pa., plans to rethink whether it should continue using Oracle general ledger, purchasing and other applications, said Edward H. Coon, director of process management. The boiler manufacturer is likely to turn over its applications business to Symix Computer Systems, Inc., a smaller software firm in Columbus, Ohio, he said.

Symix's cost and customer service are "considerably better," Coon said. "We spent \$500,000 buying a not-totally integrated applications and database system from Oracle when I would have paid 25% of that with Symix."

Oracle, Sybase battle it out for the database connectivity market. See page 93.

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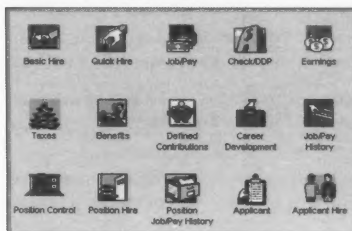
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Parallel processing mines retail data

The merchandiser's slogan "retail is detail" remains as true today as ever. And retailers have long known they can do more with their stores once they master the details that flow into their business, such as what inventory is being depleted.

The challenge sounds simple enough, but for modern retailers, meeting it has become an almost impossible task. In national retail chains with hundreds of stores, thousands of employees are expected to take a companywide buying plan and implement it on a local basis. The many stores cut across geographical and cultural boundaries, as do the goods put on the shelves. But centralized planning and buying have difficulty acknowledging all the regional differences and rarely take advantage of short-lived selling opportunities.

"The consumer has very little tolerance for snow shovels in Florida," said Randall Mott, senior vice president and CEO of Wal-Mart Stores, at the Commercial Parallel Processing Conference in Chicago recently.

Decentralizing the process carries new risks, but Wal-Mart took that tack along with a move to parallel processing in 1989, and the two steps account for much of the success of the Bentonville, Ark.-based chain. Data mining—or finding helpful business information buried in gigabytes of sales and purchasing data—became the foundation of Wal-Mart's new strategy.

Wal-Mart uses three mainframes, but even those could not handle the data mining tasks of the chain's 2,100 stores. It must load 20 million point-of-sale updates into its central relational database per day. About 2,300 complex SQL queries are issued against the central database to mine it for information. Out of Wal-Mart's 6T bytes of data, 4T bytes reside on disks for use with parallel processing machines. The rest reside on the mainframes.

"The growth curve has been almost entirely in parallel," noted Mott, whose firm hopes to get off mainframes altogether someday. The parallel systems run executive information systems (EIS) that support buying decisions for individual stores. An estimated 10 million replenishment decisions are made per day throughout the chain, but these purchases are determined on a store-by-store basis by local managers. The success of the EIS has been one of the main reasons behind the chain's rapid expansion.

Wal-Mart uses an AT&T Global Information Solutions massively parallel machine with 483 Intel processors (formerly known as Teradata, part of AT&T's NCR acquisition) for most of its work.

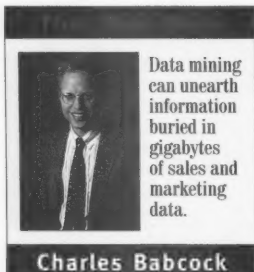
Although parallel processing will one day handle a wide variety of tasks, the Wal-Mart example makes it clear that it still tends to function in a limited role, usually in connection with relational database tables with billions of records.

A conference attendee from a pharmaceutical subsidiary—an early implementer of massively parallel processing—who asked not to be identified, warned that massively parallel processing is not a general-purpose technology. It must be fitted to specific, high-volume data tasks that lend themselves to parallelization. Believing parallel processing can do anything will invoke some hard lessons, he said.

Nevertheless, massively parallel processing excels at handling complex relational database operations. One relational operator can produce a stream of data that is worked on by another operator for pipelined parallelism. Or data can be partitioned and worked on in many slices by one operator.

"What I like is the kind of information we can pull out at a moment's notice.... The detail is predictive, not just reportive," Mott said.

Babcock is *Computerworld's* technical editor. His MCI Mail address is 575-2737.



Metaphor users win a round

IBM agrees to upgrade decision-support modules

By Craig Stedman

After intense lobbying from users of Metaphor, Inc.'s decision-support software, parent company IBM last week promised to continue developing several key enhancements as it swallows Metaphor's operations.

But IBM also said its own technology will eventually replace much of the Metaphor product.

While TCP/IP and some other features are being taken out of limbo (see chart), Steve Mills, general manager of IBM's Software Solutions Division, said the company is putting together a plan for restructuring Metaphor's Data Interpretation System (DIS) into a slimmed-down set of modules.

"There's a lot of stuff there that it's not clear to me the customers are buying the product for," Mills said. "We think we have some better technologies to move customers toward rather than just staying on DIS generically."

Electronic mail and calendar functions built into DIS are likely to be some of the pieces that are stripped away, according to Mills. But even basic database querying may be shifted toward IBM's Visualizer query tool, which Mills agreed directly competes with DIS "in some aspects."

Heavy hitters

Sandra Tice, president of Management Integration Process Corp., a DIS consulting firm in Chicago, said the installed base of about 130 customers includes "a lot of powerful clients" that IBM presumably would want to keep happy. But she added that Metaphor was "losing more customers than they were winning" due to high prices, service problems and lack of

Windows support in the OS/2-based DIS.

The pledge to move forward on TCP/IP was a relief to DIS customers who organized a letter-writing campaign after Metaphor announced last month that it was merging into IBM [CW, Aug. 29]. Nonetheless, some users said too much remains unknown for them to be entirely comfortable about DIS' future.

"For someone that has a pretty decent investment in DIS, [the TCP/IP plan] is good news," said John Tedesco,

director of marketing information systems at Nynex Corp. in White Plains, N.Y. "Their willingness to proceed on that certainly removes a showstopper. But I think we're all compelled to take a quick look at what else is out there and where that leads us."

Tedesco, who is chairman of an East Coast DIS user group, is organizing a meeting in November that he said will "present alternatives to DIS" and give IBM an opportunity to detail its plans. In the meantime, Nynex will hold off on deciding whether it should expand its DIS usage, he added.

Grassroots power

The user lobbying campaign made it impossible for IBM to "just cut DIS off at the knees," said Howard Dresner, an analyst at Gartner Group, Inc. in Stamford, Conn. However, the promised enhancements are "the minimum they can do in the short term so they don't tick off the customers," he added.

Portions of DIS that IBM is likely to retain include the Capsule tool for linking different applications and the report writing and complex query functions, Mills said. IBM has not decided if the future product will still be called DIS, which Mills said is "a pretty bad name." A full plan for DIS should be ready by year's end.

DIS and that
IBM has committed to providing the following new features for Metaphor's DIS software:
TCP/IP SUPPORT
GATEWAY TO IBM'S DB2/6000 DATABASE
CONNECTION TO LOTUS DEVELOPMENT CORP.'S CC-MAIL
SUPPORT FOR IBM'S DATAJOINER QUERY SPLITTING TOOL

Warp drives toward the Internet

By Ed Scannell

IBM will formally unveil the next version of OS/2, code-named Warp, on Oct. 11 in a splashy event in New York. But the product, to be called V3, will not actually ship until at least "a few" weeks later, sources briefed by the company said.

Last-minute beta testing of the built-in Internet access tools and efforts to stamp out stubborn bugs account for the holdup, the sources said.

The first version of V3 will be aimed primarily at home and small-office users. About 45 days later, IBM will ship the Full Pak version with full Windows support built in via IBM's Win-OS/2.

Company officials will heavily promote the product's built-in Internet tools, hoping to cash in on users' recent high level of interest (see story page 28).

At the announcement, IBM will demonstrate how OS/2's multitasking capabilities let users access information with the File Transfer Protocol (FTP) or Gopher and simultaneously use

IBM's upcoming WebExplorer to widely browse various Internet databases. The WebExplorer is expected to ship in November.

"From what we see, you can do FTP or Gopher downloads and use the [Web] Explorer at the same time through the communications protocol Serial Line Internet Protocol because the operating system can finally support that," said one user briefed by the company.

Preloaded on PCs

IBM is also using V3's built-in Internet connections to gain bundling deals for the product with various hardware suppliers. IBM last week confirmed that it has inked at least three exclusive bundling deals for V3 with hardware makers, most notably Dell Computer Corp. Dell is expected to bundle the operating system with some of its systems sold to the lower end of the market, sources said.

An IBM spokesman declined to comment further on the company's plans.

OS/2 pays dividends. See page 39.

[1991]



Oracle SQL Forms 3.0

[1992]



Oracle Case 5.0

[1993]



Oracle7.0

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News Shorts

IBM unwraps management platform

IBM recently announced a new enterprise management initiative, code-named Karat, that will integrate its network and systems management products and those of other vendors, under a single object-oriented platform. Karat is supposed to act as a "manager of managers" in multivendor enterprise networks. The first production release of Karat is not expected until late next year.

CC:Mail executive resigns in revamp

Larry Crume, vice president of Lotus Development Corp.'s CC:Mail division, resigned last week amidst a company reorganization that combined the Notes and CC:Mail groups. The new division will be headed by Jeff Papows, who runs the Notes business, and Mike Zisman, former chief executive officer at SoftSwitch, Inc., which Lotus recently acquired.

Daytona hits the ground running

Microsoft Corp. last week began shipping Windows NT 3.5 and NT Server 3.5. It also sent SQL Server 4.21a and SNA Server 2.1 to manufacturing. And according to Chairman Bill Gates, Systems Management Server 1.0 will be out before Nov. 30. That leaves only the Exchange messaging server, which is slated for release sometime during the first half of next year.

Oracle posts record quarter

Oracle Corp. posted a 40% jump in sales for fiscal first-quarter 1995, up from \$398 million to \$556 million over the same period a year ago. The database maker credited in part a 52% increase in database license sales for the quarter. Profits topped \$61 million for the quarter, up from \$37 million last year.

Managers tapping into Internet

The Society for Information Management (SIM) is launching an international information network for its members. Scheduled for release over the Internet early next year, SIMNet will allow members to conduct on-line discussions and broadcast messages to special interest mailing groups. Fees for the network will vary depending on the services used. Separately, Prodigy said it will expand Internet access for its subscribers.

Vendor to surrender source code to CA

On Sept. 16, a federal district court in San Jose, Calif., ordered Baan International B.V. to turn over source code from its Triton Tools 6.0 manufacturing environment to Computer Associates International, Inc. The source code relates to CA-ManMan/X, a product developed by The ASK Group, Inc. and based on technology licensed from Baan. CA acquired ASK in June.

Microsoft increases R&D investment

Continuing its aggressive investment in research and development, Microsoft Corp. budgeted for as much as a 50% increase in R&D spending for fiscal 1995, which began July 1. The company spent \$610 million on R&D in fiscal 1994, a 30% increase over the \$470 million spent the previous year.

SHORT TAKES At an industry forum last week, IBM's Jim Cannavino said his company is already working on a system that will run the Macintosh operating system. IBM claimed he only meant that both IBM and Apple Computer, Inc. are continuing discussions about developing "capabilities that could be shared across different hardware systems." ... **United Air Lines** has emerged as the systems integrator that will start fixing computer problems in the trouble-plagued baggage system at Denver's new airport.

Novell sets NMS platform plans

NDMS falls short of promise

By Elisabeth Horwitt

Novell, Inc. plans next year to turn its long-neglected NetWare Management System (NMS) platform into the full-function network/systems management platform it promised more than a year ago.

And it is about time, users and analysts said.

At the original fall 1993 introduction of NetWare

Distributed Management Services (NDMS), the next distributed phase of NMS, Novell executives claimed the platform would use distributed agents on NetWare servers to manage network devices. These devices include LAN adapters, hubs and routers, as well as NetWare server and client systems.

Distributing management functions would make NDMS

much more scalable than the old NMS, which crams everything into a central Windows-based console, users and analysts said.

Unfortunately, today's NDMS is a far cry from its original promise, said Andy Kiolbasa, manager of end-user computing at ITT Fluid Technologies Corp. and a user of Novell's overall platform, NMS.

A crucial missing piece of NDMS is the promised centralized SQL-based database that would act as a repository for information collected from distributed NetWare agents, Kiolbasa said. This would enable information systems managers or LAN administrators

to call up information about as big or small a slice of the enterprise network as they wished from Windows consoles located anywhere in the network.

Right now, it is possible to have multiple NDMS consoles, but each has its own database that cannot be shared with the others, Kiolbasa noted. This is fine if a company has several isolated management domains, each with its own administrator, but it is a problem for ITT Fluid, whose managers need to look at overlapping management data.

Buck Consultants wants distributed NMS so it can monitor a New Jersey computer center from its New York headquarters, said Clem Bowen, a systems analyst for the benefits consulting firm.

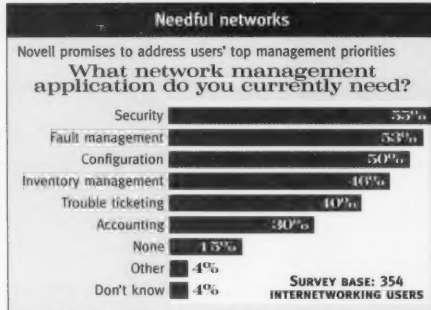
More to come in '95

Novell is planning to fix all of the above and add a lot more next year, said Vic

Langford, a recently appointed vice president and general manager at the Provo, Utah, vendor's management products division.

Just as important, Novell will extend NDMS to provide integrated management across its strategic products, including upcoming systems announced as part of chairman Robert Frankenberg's "Strategic Computing" initiative, Novell executives said.

In the first half of 1995, for example, Novell plans to have NMS manage and collect user account data from its NetWare Directory Services platform, Langford said.



Source: Business Research Group, Inc., Newton, Mass.

Novell's Corsair to pipe into Internet

By Elisabeth Horwitt

■ Novell, Inc. threw its hat into the Internet browsing tool arena last week by demonstrating at the Agenda 95 conference in Scottsdale, Ariz., last week a very preliminary version of a project code-named Corsair.

Now under development by Novell's Advanced Client product group, Corsair will use a three-dimensional Mosaic-like interface to help users find resources on the Internet World-Wide Web. It will also permit browsing on a local NetWare or UnixWare server or a remote server connected via a public data network such as AT&T Corp.'s NetWare Connect Service, Novell spokesmen said at recent press briefings [CW, Sept. 12].

The usual suspects

The product is due to ship next year, with initial client support slated for Microsoft Corp.'s Windows 95, the next version of Windows, and Macintosh.

Moreover, Novell also intends to vie with the Internet for business users through joint initiatives such as AT&T NetWare Connect Service. The service, which is still in beta testing, is said to provide a NetWare 4.1-based infrastructure for businesses to set up information services over AT&T's private network links. Novell will shortly announce similar partnerships with overseas and regional carriers, company spokesmen said.

The combination of a visual browser with a reliable framework for business services "has real potential," said Mark Dodge, manager of LAN and PC systems at United Parcel Service, Inc. in Mahwah, N.J. "Look at the problems people are having installing and managing Notes and other high-flying applications over geographically-separated nodes. I would definitely look seriously at a product like that," he said.

Dodge also said he was interested in Corsair, but "it sounds like it's about two years away."

The Internet browser market is

rapidly becoming crowded, with IBM due to ship a browser as an add-on soon after the next OS/2 release and Microsoft bundling a browser with Windows 95. Both will provide graphical front ends to access Web servers.

Desktop access

Nevertheless, Novell's Advanced Client could be a "real winner" by delivering easy Internet access "right to the desktop" via NetWare, said Amy Wohl, president of Wohl Associates in Narberth, Pa.

However, Novell needs to get rid of the NetWare bias that was evident at the admittedly very preliminary demonstration, Wohl said. For example, Novell used an office-city-world simulation, similar to one used by General Magic, Inc., through which users travel to get to services or resources. But while General Magic users can move Internet access to their simulated desktops, Novell requires them to leave the office — by jumping out the window — and traveling to another place, Wohl said.

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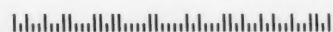
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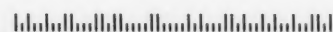
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- (c) OS/2 (g) Windows
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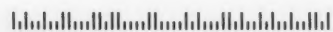
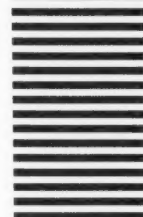
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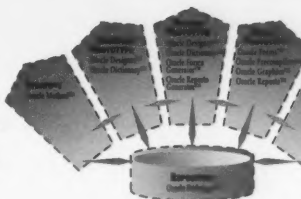
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Sybase abandons repository product

By Kim S. Nash

Sybase, Inc. has canned plans to create an application development repository, vowing instead to add features once slated for that product to other tools.

One such tool is Build Momentum, a graphical client/server product in beta

testing, company officials said last week.

The Enterprise Momentum repository was to be a warehouse to store client/server application designs and objects. It was also supposed to be a means of uniting Sybase's character-mode development products with graphical tools in the works. But now that plan is up in the air,

said Tim Harmon, director of tools product marketing.

"We no longer think of [Enterprise] as a singular, monolithic product," he said. "We think of it as many products and features that will add value to Build, but we have to figure out how to productize it."

Harmon said functions planned for En-

terprise may be released as separate smaller products, but he gave no time frame for when that might happen.

Analysts were not surprised that Sybase has thought better of trying to create a repository.

"Enterprise has been one of the most grandiose schemes I've heard of in a long

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Lost tool time

Sybase has changed its plans vis-a-vis the Enterprise Momentum repository

Product	Promised ship date	Latest schedule	Changes
BUILD MOMENTUM	Beta in first-quarter 1994	Still in beta testing now; general release planned for fourth quarter	Conversion aid missing from Version 1.0
ENTERPRISE MOMENTUM	Beta in first-quarter 1995	None	Most features to be split into other products

time, and it has fallen apart in pieces," said Mark Hanner, an analyst at Meta Group, Inc. in Burlingame, Calif.

"Everyone talks about a Holy Grail repository, but no one knows what to do with it or how to build one," said Herb Edelstein, an analyst at Euclid Associates, a consulting firm in Potomac, Md. Repositories have long been a thorn in the side of computer-aided software engineering firms, he noted.

Meanwhile, Sybase has eliminated "a small percentage... maybe less than 5%" of positions in its Enterprise engineering group, according to a spokesman. He declined to say how many jobs are gone.

Another change upset some Sybase users: Build Momentum will not include a promised utility to let users convert older, character-based applications created with Sybase's APT tool to Build.

At least two Sybase software suppliers received early editions of Build in February. While Sybase called the product a beta version then, "it was really alpha," said Glen Epperson, director of software development at Hill Arts & Entertainment, Inc. in Emeryville, Calif.

Hill Arts has "a major investment" in applications it built with APT, Epperson said. "I bought into Sybase saying [a converter] was coming so I'll have to wait."

Before Sybase announced the Momentum tools plan more than a year ago, it encouraged customers to buy products from Powersoft Corp., JYACC, Inc. and others. In fact, analysts estimate that at least half of Powersoft's installed base is Sybase users.

Avalon Software, Inc., a Tucson, Ariz., manufacturing applications maker, also got early versions of Build Momentum and figured it would have Build-based products out by June [CW, March 28].

"We're proposing a partnership with Sybase to see if maybe Avalon can't help" get the converter and Build going, said M. R. Rangaswami, vice president of marketing at Avalon.

Forte targets high-end tools. See page 93.



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American Express claims re-engineering saves \$1.8B

By Joseph Maglitta

In the past two years, American Express Co.'s wide-scale re-engineering has slashed more than \$1.8 billion in operating expenses at the company's largest business unit, Travel Related Services Co.

Such news from the normally tight-lipped firm was significant because it represents one of the largest public claims to date about hard-dollar savings from re-engineering.

"We've been correcting a lot of past sins," Randy L. Christofferson, vice president of quality and re-engineering at the \$9.8 billion unit, said last week.

Analysts called the cost-cutting a good first step in helping the \$28 billion diversified financial services firm recover from its steep slide in the early 1990s. But several said more radical re-engineering is needed.

A financial and technology powerhouse in the 1980s, American Express spent more than \$1 billion on information systems in 1989. But in 1990, net income plunged at Travel Related Services — mainly due to a decline in its credit-card business — and triggered technology cutbacks.

Since the effort began in February 1992, the American Express business unit has completed more than 200 re-engineering projects of various sizes, Christofferson said. Widespread process redesign helped cut 4,800 workers and free up funds to start new credit cards and enter other businesses.

Many of the newly re-engineered operations will be serviced by a slimmed-down version of the troubled Genesis system, which is due by year's end. Begun in 1987, the massive computer-aided software engineering project was intended to replace Travel Related Services' core information systems. But technical and organizational delays slowed the rollout. Final costs are expected to hit \$120 million — nearly double the original estimate.

Christofferson said several of the revamped processes, such as a new Prospect Credit System and marketing database, run on high-performance, massively parallel systems brought into production earlier this year. Other revamped processes, including credit-card

spending and monthly credit-card reports, may also be switched off of IBM ES/9000s. Some 100 re-engineering projects are still underway, he added.

Claims that re-engineering savings helped Travel Related Services build new businesses are impossible to verify, said Joan Solotar, vice president of New York brokerage Donaldson Lufkin & Jenrette. "The credit-card business is doing quite well. They've publicly [said] they hope to develop 10 or 15 new credit cards," she said.

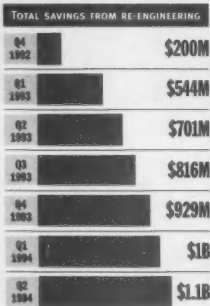
In July, Travel Related Services reported a 13% increase in net income to a record \$263 million. Christofferson said re-engineering reduced the unit's discretionary spending by 11% from 1992 levels. Cuts came from operations, advertising, provisions and interest, he said.



Amex's Randy L. Christofferson; leads cost-cutting effort

Many pennies saved

American Express Travel Related Services says savings from re-engineering quintupled over the past two years



Source: American Express Co.

SAP and D&B simplify client/server app prices

By Rosemary Cafasso

Client/server heavyweights SAP America, Inc. and Dun & Bradstreet Software plan to roll out simplified pricing structures this week that will finally eliminate the mind-numbing exercise of negotiating contracts.

The software vendors are scheduled to separately announce plans to eliminate most elements that exist on price sheets (including type and numbers of servers) and focus on two key pieces: the software itself and the number of users.

But the changes do not necessarily mean price breaks. The one exception is D&B Software's new price on its SmartStream Decision Support Software, which will now sell for about \$25,000, compared with other SmartStream applications that cost about \$50,000.

In essence, the companies are shifting prices to a more simple model. As a result, the contract calculations and managing the software environment once it is installed should be much easier.

"It could make a significant difference," said Jack Spurgeon, a vice president and director of systems and computer services at Eastman Chemical Co., a SAP mainframe shop with a small SAP R/3 client/server installation. "Under the previous algorithm, it was extremely difficult to try to forecast exactly what your costs would be and a great deal of effort to make sure you lived in the parameters of the contract."

SAP and D&B Software original-

ly set up pricing structures like many other client/server software providers: chock-full of criteria, options and exceptions.

As a result, users have been pressuring vendors to back off these complex schemes so they can more easily get their arms around client/server software costs. Both SAP and D&B promised months ago to fix the problem.

In D&B's case, the new model attempts to standardize pricing by assigning set fees for software and users. The firm adopted a unit

measurement system in which each unit equals \$50,000. Most SmartStream application modules equal one unit. A block of 50 users equals one unit. A second tier will cover "casual" users who need only occasional access to the system.

A block of 50 casual users equals half a unit or \$25,000.

Of course it will not stay quite so simple. For example, the unit prices on user blocks will decrease as companies scale up beyond several hundred users.

SAP does not intend to provide a unit-based system, but it too will offer pricing based on application module fees and number of users. Like D&B Software, it will provide for power users and occasional users, charging infrequent users about half a full user fee. The company would not release specific prices, however.

Jeff Comport, a research director at Gartner Group, Inc. in Stamford, Conn., said the expected changes from D&B Software and SAP should help address several user concerns.

Simpler pricing is consistent with the trend 'toward more user-based or value-based pricing.'
— Jeff Comport
Gartner Group

Users debate merit of desktop standard

By Steve Moore

Knowing they are within range of a double-edged sword called the Desktop Management Interface (DMI), PC LAN managers and PC software vendors are trying to decide which way to jump — or whether to jump at all.

"We want DMI; it has promise," said Art Beckman, manager of client support services at Pacific Gas & Electric Co. in San Francisco. "While we've been waiting for it, we've done a lot of things on our own. But I'd like us to get out of the business of writing our own internal packages" for desktop management tasks, he said.

Developed by the Desktop Management Task Force, the DMI interface pro-

vides a standard way for desktop hardware and software components to provide information about themselves to network and systems management applications.

With standard DMI information about desktop hardware, PC applications will be able to install themselves efficiently or automatically report on their usage in accordance with a software license.

"In some cases, people could save 30% or more on their software acquisition costs" by using DMI to fine-tune software allocation and license tracking, said Kirsten Mortensen, communications director at the Personal Computer Assets Management Institute, a user advocacy group.

But some users are not impressed.

"We've been able to do everything we need on the desktop with our existing tool set, running Norton's LAN Administrator on our Vines network," said John Scoggin, network operations supervisor at Delmarva Power & Light Co. in Newark, Del.

Two-way street

The DMI issue is double-edged because it will allow software vendors to charge for applications on a usage basis and give users an unprecedented ability to compare desktop software packages.

"DMI will kick off measurement of the performance and resource utilization of desktop software, and vendors with inefficient software will be losers," said consultant Frank Dzubeck, president of

Communications Network Architects, Inc. in Washington.

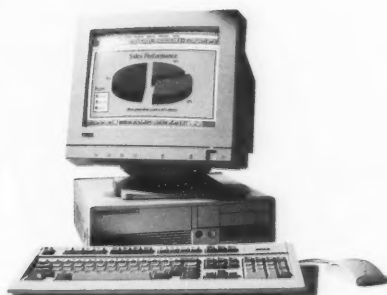
The vendor-controlled side of DMI "gives vendors the ability to track software usage, which has been a sore spot because so much revenue has escaped them," said John Morency, a principal consultant at Strategic Networks Consulting, Inc. in Rockland, Mass.

However, LAN administrators and end users hope DMI will help them reduce vendors' revenue streams in a different way.

"If they're being charged on a usage basis, users will learn to go into an application, get their work done and get out," said Arnold Howard, a senior PC LAN analyst at Boston-based John Hancock Financial Services. "As an end user, you may get a report saying, 'You've been using this application too much or too little,'" Howard noted.



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DEC to simplify pricing

Restructured licensing to accompany latest product releases

By Mary Brandel

■ Digital Equipment Corp. will simplify what one analyst called its "byzantine" licensing strategy this week and announce new releases and updates to three software products.

A Digital spokesman would confirm only that licensing will be "greatly simplified." However, sources said the current 28-tier strategy will be collapsed to six tiers — three for the VAX line and three for the Alpha AXP line.

"Anything that simplifies [Digital's] licensing would be a tremendous benefit," said Joe Pollizzi, project engineer at the Space Telescope Science Institute in Baltimore.

One, two, three

Greg Casto, president of the Digital Dealers Association, said he expects the three tiers to be enterprise, workgroup and departmental. Under the new strategy, he said, it is likely that users migrating within a system class will not have to pay for new software.

"In a perfect world, you'd buy a departmental server and pay X amount of dollars for the software rather than have various strata within the departmental server category," said Terry Shannon, an analyst at Illuminata in Hollis, N.H.

In addition, Casto said, Digital will likely abolish its "clusterwide" license option, so users have the choice of a concurrent, personal or traditional license.

Migration incentives from VAX to Alpha are expected as well.

Digital will also announce Pathworks 5.1, which was demonstrated at Network/Interop '94 in Atlanta earlier

this month.

The release will feature the following:

- A bundled Mosaic interface for Internet access.
- Bundled runtime versions of Distributed Computing Environment (DCE) and Object Broker.
- A bundled RoamAbout client-enabling wireless remote access to the network.

The new release — slated to ship this week — will be available only for DOS and Windows clients, with Macintosh support to follow. Pricing will be announced this week.

Moving up

Although most users are still in the throes of migrating to Pathworks 5.0, at least one said he is likely to choose 5.1.

"It doesn't have anything we need right now, but the DCE and Object Broker features were high on our list of 'nice to have,'" said Stephen Crusenberry, a senior network systems analyst at a large engineering firm in Northern California.

Digital also said it will announce functional upgrades to Linkworks, its groupware software, and Accessworks DB Integrator, its database access tool.

The company would not confirm details, but a source said Linkworks pricing will be cut 44% to \$500 per seat. The source said Digital will extend the number of databases that DB Integrator can access from nine to 66.

Down the Path

The new features in Pathworks 5.1 further its evolution from a network operating system to a network operating system integration tool. Digital started that migration with Version 5.0. "People use it as a NOS, but Digital is emphasizing its middleware enhancements," a spokesman said.

HP/UX 10.0 promises one set of source code

By Jean S. Bozman
DENVER

Hewlett-Packard Co. last week lifted the curtain on its next Unix release, which it said will support fast recovery from outages and provide a single set of source code for workstations and Unix servers.

But while Carol Mills, general manager of HP's General Systems Division, gave Interex '94 conference goers here an overview of HP/UX 10.0, some users complained that HP was playing its Release 10.0 card too close to the vest. Speakers at most HP/UX sessions did not describe it and would not answer questions about the release.

"I want to see what 10.0 is going to bring to the table," said Don Parker, a software developer at E-Systems, Inc. in Greenville, Texas. "One of the reasons I came here was to see where our applications are going, and 10.0 is part of that."

HP/UX 10.0 will be the first release to unify the code for all of HP's Unix workstations and Unix servers — replacing a double set of

source code and simplifying system administration. That is expected to ease development for users and attract application vendors to HP/UX.

Doug Eltoft, president of InterWorks, Inc., a national organization for HP workstation users based in

Under construction

HP/UX 10.0 will include the following:

- Common operating system kernel, commands and administration utilities for all of HP's Unix workstations and servers.
- A software distributor module that "pushes" updates of software applications to clients and servers throughout a corporate network.
- The first HP Lock Manager, which will allow Oracle Corp.'s Parallel Server to run on clusters of loosely coupled HP Unix servers.
- High-availability features, workload-management software for SMP servers, enhanced security for remote log-ins and quick installation.

Chelmsford, Mass., said he wants 10.0's built-in support for the Open Software Foundation's Distributed Computing Environment (DCE).

"DCE will free us to put in a distributed file system and distributed applications such as E-mail, printing and software distribution," said Eltoft, an information systems manager at the University of Iowa's engineering college.

The release's journal file system will allow quick restarts and ease system management.

"The journal file system will make it easier to add more space to a file system without taking the system down," said Tom Kost, a system programmer at Sprint's Information Services group in Overland Park, Kan. "You can do that on the fly."

Wait 'til text year

While that may be good news for users, the downside is the wait involved: HP said it will not ship 10.0 until late next year.

Tom Willmott, an analyst at the Aberdeen Group in Boston, blamed the HP/UX 10.0 delay partly on problems in completing revisions to the release's multithreaded kernel. But HP maintained it needs to do quality-assurance testing and final hand-off to software vendors.

Videoconferencing prices plunge in bid for user acceptance

By Suruchi Mohan

Vivo Software, Inc. last week became the latest to join the fast-growing ranks of companies driving down the cost of videoconferencing applications to affordable levels — a trend that began last fall.

Priced at less than \$2,000, the offering from the Waltham, Mass., company is good news for videoconferencing enthusiasts. The system complies with the H.320 videoconferencing standard and offers a software coder/decoder application, a video capture and audio card, an Integrated Services Digital Network (ISDN) card, a camera and a speaker.

At this price, Vivo's system improves upon competitive offerings primarily because of its software coder/decoder, which most videoconferencing companies are shooting for. Currently, most coder/decoders are hardware-based.

Still, analysts said prices must fall below the \$1,000 level for the application to gain widespread acceptance. And all signs indicate that they will, probably within the next two years, according to Sarah Dickinson, program director at Personal Technology Research in Waltham, Mass.

Cut in half

In the past year alone, PC-based videoconferencing systems have dropped from the \$3,000 to \$5,000 level to the \$1,000 to \$2,500 level, according to Rich Doherty, director of Envisioneering Group, Inc. in Seaford, N.Y. "There has been a halving of the average price for the same or better quality," he said.

"The price still needs to go down to several hundred dollars," said Eric Hindin, a senior consultant at Strategic Networks Consulting in Rockland, Mass. "Right now, [videoconferencing] is good for specific niche applications. Companies like Intel are still aiming at the mass market though the product is too expensive."

Moreover, in a survey of 75 companies, David Boomstein, senior vice president at Applied Business Telecommunications, Inc. in Livermore, Calif., found that 55% of users would use a videoconferencing system if it cost about \$1,000; 31% indicated they could afford to pay between \$1,000 and \$5,000.

Encouraging the downward spiral in prices are a number of developments in the technology, according to Boomstein. These include taking advantage of existing CPUs instead of adding more hardware; using software for functions such as compression/decompression, which have traditionally been performed by hardware; and a greater use of the technology that could lead to an economy of scale.

However, one stumbling block is the technology's dependence on ISDN. Doherty said he believes ISDN will limit market size because it is not growing as rapidly as anticipated. But Boomstein said that although all areas of the country are not wired for ISDN, local carriers have the ability to provide a connection to most people.

However, Dickinson said ISDN alone will not make or hinder the technology's advance. Rather, the success of videoconferencing will depend on how quickly its proponents are able to integrate LANs with WANs. Users "need both LAN capabilities and telecommunications. You can't talk of a true network unless you put those two together. If you're on a LAN, you don't want to jump in and out of the environment to use the facility," Dickinson said.

Viewpoint Systems in Dallas demonstrated this integration at the recent Network/Interop '94 conference in Atlanta.

HP launches campaign to grab AS/400 users

By Mark Halper and Craig Stedman

In the mold of its successful mainframe alternative program, Hewlett-Packard Co. last week kicked off a campaign to lure AS/400 users away from IBM.

The strike, code-named AS/sault, provides discounts of up to 30% to customers trading in their AS/400s for HP 9000 Unix servers. HP has set up seven transition centers around the world to assist in migrations from the AS/400. It has also signed 16 value-added resellers, systems integrators and software vendors — many of which double as AS/400 resellers — to be channel partners in the program.

HP claims to have sold about 1,000 of its top-of-the-line Corporate Business Servers in the first two years of its mainframe migration program. But users and analysts said it will be a stiffer challenge to entice AS/400 customers with AS/sault, which HP formally calls the Open Midrange Alternative.

"A lot of the initial success on the mainframe alternative came from moving people off older mainframe technology, but the AS/400 is still a viable alternative" to Unix systems, said Susan Frankle, an analyst at International Data Corp. in Framingham, Mass.

Users fear uncertainties

HP also faces the obstacle of moving shops off of a reliable workhorse such as the AS/400 to the less-proven Unix environment. This comes at a time when IBM is scheduled to ship PowerPC-based AS/400 models in mid-1995 and a new operating system late this year that supports Unix application programming interfaces.

The HealthInfusion division of Coram Healthcare Corp. already has a pair of HP 9000s in addition to its main AS/400 processor. But Marc Novik, director of information management at the Miami unit, said he is "real scared to put any kind of mission-critical applications" on the HP machines. Instead, he uses them to develop multimedia sales materials.

The HP servers also require a lot of care, Novik added. "We have five people that feed the HP 9000s because they don't have some of the integrated services that are part of the AS/400," such as its relational database, he said. On the other hand, the AS/400 needs only a single operator, he noted.

Sam Ellis, an avid HP 9000 user at Portland Community College in Portland, Ore., said HP must "combat the emotional attachment people have because there are a lot of loyal AS/400 users out there."

Rich Kolbe, director of MIS at Harley-Davidson, Inc. in Milwaukee, is one of

those loyal IBM customers. Kolbe said he has little interest in looking at alternatives to the AS/400. "We're very pleased with what we have on the 400, and I would be very surprised if we considered changing hardware platforms," he said.

In HP's favor is the fact that AS/400 loyalty may not be as strong as it used to be, said Matthew Street, president of South

Bend, Ind., integrator Orion Group. But the real question "is whether customers will go to [IBM's] RS/6000," another Unix series, or look at other vendors, he said.

Ligett Group, Inc., a Durham, N.C.-based tobacco company, is moving from the AS/400 to the HP 9000. But Paul Dickerson, a senior systems engineer at Ligett, explained that the company is mak-

ing a broader migration from IBM's old 4381 mainframes and decided it made sense to abandon the AS/400 at the same time. The company has been running only one maintenance application on the AS/400, he added.

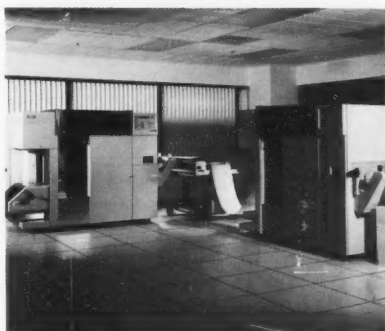
Object-oriented applications for the AS/400 are shipping. See page 88.

SIEMENS NIXDORF

Behind the face

HP's gentlemanly competitive face is a bit more warrior-like inside the company. Besides AS/sault, HP has marketing pushes internally labeled DEC Attack and System 36 Strike.

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Old vs. new takes conference stage

By Melinda-Carol Ballou
WASHINGTON

At the Software World USA conference here last week, overloaded developers continued to seek a balance between the pressure to move to leading-edge technologies and the need to cultivate time-tested techniques to maintain stability for new and existing applications.

Conference topics — "Avoiding the Client/Server and Object-Oriented Maintenance Nightmares of Tomorrow" and "The Human Impact of Client/Server Migration" — mirrored these concerns.

Graphical user interface development tools and object-oriented techniques show promise for getting control of the

backlog in a world that constantly overwhelms information systems departments with the need for more software, said many speakers and users attending.

"At this point, we're overloaded," said Mark Lee, a computer specialist at the Smithsonian Institution. He said his group hopes that new tools and object-oriented programming techniques will help alleviate the problem.

Barriers to bringing in new technologies include conflicts between older, more conservative developers and the younger generation, as reflected in the title of one session, "The Clash of Two Cultures: The Future of Application Development as Seen by the Young Turks & Old Goats." This clash mirrors the conflict

between older, structural approaches to programming and object-oriented and visual-based programming techniques, said conference chairman Ed Yourdon.

Nearly all of 12 attendees interviewed last week agreed that these conflicts must be resolved. Without appropriate blueprints and design structures in place, developers can easily create more chaos than previously existed.

But reconciling these differing approaches is no easy task, according to many who attended the show partly to seek answers. "We're transitioning to client/server and have tested the waters a little... but are trying to develop a more methodical way of making the move," said Rick Stanley, a systems planner at Westinghouse Electric Corp. in Baltimore. "It is important to structure [new development], and I'm here to help figure out a plan to do that."

Those further along in the process emphasized that it is critical to use disciplined programming practices for migration even while embracing the new technologies.

"I'd much rather be leading the charge into the future than digging my heels into the ground, but that's what our company needs," said Steve Bucuales, vice president of Residential Services Corp. of America, an affiliate of Prudential Insurance Co. in Frederick, Md. "You read articles about utopian solutions that just don't exist. In many industry portrayals [of client/server transitions] it turns out that all the warts and wrinkles have been sanitized out of existence."

His company used the structured methodologies of James Martin & Co. and its consulting services to move eight key corporate projects to client/server.

At Software World USA, Antares Alliance Group demonstrated its Process Vision modeling, analysis and re-engineering tool kit, and James Martin & Co. released a new version of its Systems Redevlopment Methodology framework for re-engineering applications.

BackOffice costs startle

CONTINUED FROM PAGE 1

migration for budgeting reasons alone."

The pricing scheme announced last week for all Microsoft server products splits costs between the server and clients. Users will pay a single price for the server and then purchase client licenses on a per-user basis. This could result in a significant increase in cost for some users (see chart).

For the entire BackOffice suite, for example, the server fee is \$2,199, and each client costs an additional \$309.

In a typical scenario presented by Microsoft, a customer with five servers and 500 users who want access to each server would pay for five server licenses and 500 client licenses. By comparison, under Novell, Inc.'s pricing model, the user would pay for five servers and 2,500 client licenses for this configuration.

However, in some cases, customers may experience blinding sticker shock. For example, under the new scheme, a single NT Server with 1,000 user licenses will cost about \$24,476; the previous price was \$2,995 for an unlimited number of users. This assumes that users already have Windows for Workgroups, which includes client software for Windows NT 3.1, according to materials released when NT was introduced in May 1993.

Model of fairness

Although some customers immediately balked at the new pricing when informed of it, Microsoft insists that the scheme represents significant savings in many situations. The model provides a consistent, flexible pricing scheme and "allows our dealers and systems integrators to deliver Windows NT Server with the care and professionalism that our large corporate customers ask for," the company said.

Some dedicated Microsoft customers do not buy that explanation.

"I think it's a big mistake," said an information sys-

tems manager at a large corporation who uses Windows NT and asked to remain anonymous. "When you have so many seats, price becomes a very real issue."

"It's very confusing," said Byron Jones, microsystems manager at the University of Miami in Coral Gables, Fla. "From what I gather, if you take an average network of 150 users, the new structure doubles or triples the old structure. But even still, it seems cheaper than the Novell plan."

And while Microsoft acknowledges that large users will pay more for NT Server under the new system, it insists that costs for the majority of users will decline. The average NT server has 22 clients, according to the company.

Additionally, by the time the server applications are factored into the bundle price, customers come out ahead, Microsoft asserts. The company explained in published materials that "customers who license the entire Microsoft BackOffice will find the price is significantly lower than the sum of the licenses for the individual products."

User benefits

Meanwhile, other users and analysts see the advent of a server suite as a boon to users in several ways. High on the list of reasons why are the inherent benefits of buying an integrated suite of applications from a single vendor.

"You won't get fired if you buy everything from Microsoft, [partly because] you need to be able to point fingers" if something goes wrong, said Jim Rowell, MIS director at HCI Services, a health care provider in Norcross, Ga. The company runs Oracle Corp.'s relational database management system on Novell's NetWare, and it can be frustrating to trace down problems in such a multivendor environment, he said.

Rowell said the BackOffice bundle may also tempt him because of Microsoft's promise to more closely integrate the servers over time.

To date, Microsoft is the only vendor with all the pieces in place to build such a suite. Accordingly, analysts said they expect the announcement to promote partnerships and similar bundling strategies from server application leaders such as Novell, Oracle and Lotus Development Corp.

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SMS	NA	\$55,599
BackOffice Bundle	NA	\$311,199

*Assumes one server and 1,000 clients; additional servers cost extra, but additional clients do not

Banyan users wrestle

CONTINUED FROM PAGE 1

ent pricing model and did not take into account the installed base," Stouder said. Banyan's customers are among some of the largest networks in the country.

Banyan's response was threefold: Vines is still cheaper than Novell, Inc.'s NetWare; it had to halt the unlimited licensing for business reasons because today's hardware can support too many users; and it is working on an enterprise pricing structure that it will announce next year.

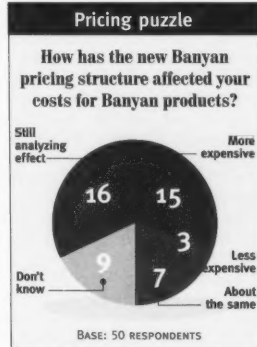
Otherwise satisfied users said they looked forward to exploring the following topics at the Association of Banyan Users International (ABUI) conference under way this week in Providence, R.I.:

- Banyan's messaging strategy.
- Support for third-party developers.
- Management across different client, server and network operating system platforms.
- Vines integration with Unix platforms.
- Windows-based administration of Vines.

Of the users surveyed, 34% said cross-platform management was their highest priority for Banyan, and 32% percent said that Windows-based administration of Vines was most important. Banyan issued a statement of direction for a Distributed Enterprise Management Architecture (Demarc) in August and began shipping Windows-based administration software. It is expected to further define the Demarc strategy this week.

"With BeyondMail 2.0 and Intelligent Messaging III, there will be a strong interest in messaging. I know my company is sending three people just for that," said Ted Kull, ABUI president and project manager at the Educational Testing Service in Princeton, N.J.

BeyondMail is the electronic-mail and workflow application that Banyan acquired last spring with its purchase of Beyond, Inc. Intelligent Messaging III is a robust messaging engine that Banyan shipped in June.



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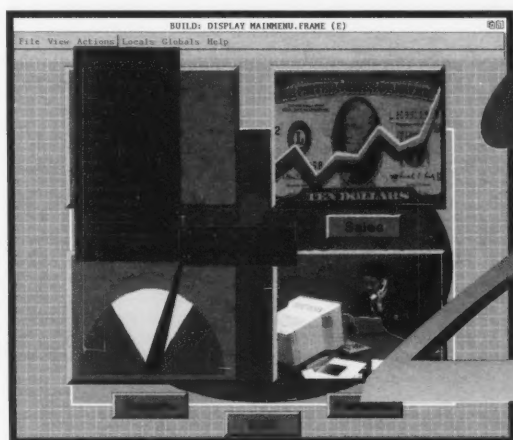
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Wang gets Bullish with imaging/workflow deal

Bid to purchase divisions of Groupe Bull will bulk up revenue

By Mary Brandel

■ **What do you get when you cross a former minicomputer giant with a struggling mainframe company? For Wang Laboratories, Inc., the answer is a possible 40% increase in revenue.**

Wang, which in the past year has emerged from bankruptcy and established itself as a profitable workflow/imaging vendor, is entering a \$160 million deal with Groupe Bull, Inc. to purchase its U.S. customer services and imaging/workflow businesses.

If all goes well, Wang would become a \$1.2 billion company at the end of this year, which is when the deal is expected to be completed. It would also move its headquarters from Lowell, Mass., to neighboring Billerica with the purchase of Bull's headquarters there.

Good news

Analysts called the move a strong step forward for both companies and most customers. Wang would become a growth company in its chosen area, and Bull, which lost \$146 million last year, would be free to focus on more strategic areas, such as its new PowerPC-based multiprocessor servers.

What is not clear, however, is where this would leave Bull's imaging customers.

In the proposed deal, Wang would purchase the following:

- Bull's 1,200-employee, \$170 million U.S. customer service unit, which provides service for Bull's GCOS mainframes and other platforms. This would double Wang's current customer service work force and increase its U.S. service revenue to \$380 million. Wang would rank among the Top 10 service organizations in the U.S.

- Bull's Imageworks and Flowpath imaging and workflow software suites and support staff. By absorbing Bull's 470 imaging installations, Wang would grow to 1,570 sites and be the No. 1 workflow/imaging supplier in Europe.

- Bull's 900-employee, \$150 million federal systems integration practice. The purchase would make Wang one of the top players in that market, doubling its revenue from government accounts to \$290 million.

- Bull's Canadian, Mexican, Australian and New Zealand subsidiaries. Two-thirds of this revenue is attributable to customer service.

Because Wang had already invested heavily in its services infrastructure as part of its bankruptcy restructuring, the company is looking to enlarge its customer base in that area, said Scott McCready, an analyst at International Data Corp./Avante Technology in Framingham, Mass.

"Size is key in customer service in terms of profitability," McCready said. "And once the infrastructure is in place, the incremental revenue is profitable."

Wang would likely reinvest the resulting profits in its imaging and workflow products, which it sees as its ticket to stability.

Wang's planned acquisition of Bull's services bodes well for Bull customers as well.

"We have a full-time Bull representative, and I don't anticipate that changing," said John Rudasill, president of Carrier Computer Services, a subsidiary of Carolina Freight in Cherryville, N.C. "If anything, service will be better because there will be more field service people out there."

In addition, Bull would have a service offering for its Zenith Data Systems PC subsidiary. "Bull had been looking for a maintenance partner that could under-

stand the businesses it was in and that could bring in a vendor-neutral approach," said Eric Rocco, an analyst at Dataquest Worldwide Services Corp. in Framingham, Mass.

In fact, PC vendors such as Compaq Computer Corp., AST Research, Inc. and Packard Bell Electronics, Inc. are likely sources of service revenue for Wang, McCready said. Dell Computer Corp. already uses Wang services in Australia.

However, customers of Bull's imaging/workflow software face an uncertain future. Wang said it would support the products for an unspecified period of time but noted there would be "a converged product set at some point in the future." A Bull spokesman said the company intends to ship the next expected release.

Bull's Imageworks was something of a sleeper in the U.S., with only four installations and one OEM deal with Electronic Data Systems Corp.

What's the deal?

Analysts said they would like Wang to further clarify its plans.

"They're both completed products, so you can't just suddenly shuffle them together," said Ronni Marshak, an analyst at Patricia Seybold Group in Boston. But McCready noted that both are based on IBM's AIX Unix operating system and have Windows front ends. The only glitch is that Bull supports European communications standards, he said.

The deal would free Bull to focus on its newly announced PowerPC-based multiprocessor servers developed with IBM, its significant U.S. GCOS installed base and Zenith Data, which represents half of Bull's \$1.5 billion U.S. revenue. The vendor is also retaining its commercial integration business, Integriss.

Bull expects U.S. revenue to decline from \$1.5 billion to \$1.2 billion in 1995 as a result of the deal.

The deal would also include:

- Distribution agreements, which include Wang reselling Bull hardware and Bull using Wang's imaging products as the cornerstone of its systems integration.
- Bull would own 4.9% of Wang shares and be represented on Wang's board of directors.

Bull, IBM develop similar SMP servers. See page 69.

Step forward for Wang		
	BEFORE THE DEAL	AFTER THE DEAL
Revenue	\$855M	\$1.2B
Imaging/workflow systems worldwide	1,100	1,500
Total cash	\$189M	\$79M
Total employees	5,100	6,400*
North American field service workers	2,500	5,000

*Before expected layoffs

Network medicine offers its share of headaches

By Mitch Betts
WASHINGTON

Hardly a week goes by without another publicity-heavy demonstration of how the information superhighway could be used for long-distance medical consultations. The problem is that while the technology works, there are legal, insurance and other barriers to widespread use of "telemedicine."

Last week, an industry consortium called the National Information Infrastructure Testbed demonstrated a coast-to-coast telemedicine network for voice, data and images. The technology involved a blend of fiber-optic and satellite networks and a supercomputer for manipulating three-dimensional medical imagery.

Advocates say telemedicine can bring the expertise of medical specialists, usually located in big urban hospitals, to doctors and patients in outlying areas.

"Telemedicine will not put a stitch in a

laceration or pull a fishhook out of a child's face... but it will help me to deal with complicated cases," testified Richard D. Sanders, the only doctor in rural Creole, La., at a recent congressional hearing. "I could transmit X-rays and cardiac monitor strips to a specialist and seek advice."

Legal obstacles

However, relatively few real-life telemedicine consultations have occurred in the U.S. — compared with its widespread use in Canada, Australia and Norway — because of questions about insurance reimbursement, malpractice liability and licensing.

"Those [nontechnical issues] are the primary barriers to telemedicine these

days, not the technology," said Mark K. Schneider, a health care industry consultant at Arthur D. Little, Inc. in Cambridge, Mass.

Perhaps the biggest obstacle is the fact that private insurers, Medicare and Medicaid all require "face-to-face" encounters between the patient and doctor for insurance reimbursement. Doctors and patients will have no financial incentive to embrace telemedicine until this changes.

In addition, it is not clear which of the doctors involved in a telemedicine consultation has legal liability for the case. No "telemedicine" cases have arisen yet, but "malpractice liability may prove to be one of the most vexing problems," testified Jay

H. Sanders, director of the Telemedicine Center at the Medical College of Georgia.

A third issue is whether physicians should be licensed in every state where they provide services via telemedicine. Kansas recently joined a growing number of states that require out-of-state physicians to be licensed in Kansas if they use telemedicine to provide primary diagnosis and treatment to in-state patients. Meanwhile, it is hard to cost-justify telemedicine systems costing \$5 million to \$20 million, noted Roy Walters, a vice president at First Consulting Group in Chicago.

The ultimate test for telemedicine is whether patients like it or find it too impersonal. "Culturally, we expect a high-touch approach to medicine, and telemedicine may not be as satisfying for the patient," Schneider said.

A multihospital initiative in Atlanta uses mobile video technology to let off-site doctors help patients and paramedics. See page 77.

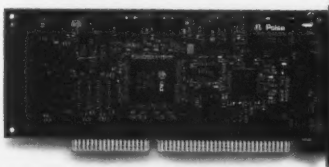


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IS serves up success at Boston Chicken

By Julia King

High-flying small fry Boston Chicken, Inc. last week rolled out new store-based information systems to its 400 restaurants. In doing so, it added another ingredient to its simple yet highly strategic IS recipe for success in the multibillion-dollar fast food industry.

Made up of Windows-based PCs and customized forecasting, scheduling and inventory applications, the company's new IntelliStore system is "not exactly space shuttle technology," said Boston Chicken President Bruce Harreld.

Neither are the in-store PC-based kiosks the company is installing to collect feedback from customers and Lotus De-

velopment Corp.'s Notes databases.

But together the systems are expected to furnish the kind of information needed to continually develop and launch menu items demanded by customers. Beginning this month, for example, the restaurants will roll out new side dishes every month instead of once a quarter.

Instant feedback from diners about

food quality and restaurant cleanliness also will work to boost customer service.

"Now when a customer has a concern we take a telephone call and immediately call or fax the local store where the customer ate and ask that store to follow up with the customer," Harreld said.

The IntelliStore system, by contrast, will provide local restaurants with customer feedback on a shift-by-shift basis.

Boston Chicken is not unique in applying information technology to the fast food industry. It is, however, "ahead of the curve" compared with most competitors, according to Ron Paul, president of Technomic, Inc., a restaurant industry consultancy in Chicago.

"In general, they've made a larger investment and commitment to technology than others. The most innovative twist so far is their commitment to building store information systems that tie back" to the rest of the company, Paul said.

Fast food chicken — or home meal replacement, as Harreld prefers to call the business — is all about variety and speed. Boston Chicken's secret for achieving both is providing everyone — from construction crews building new stores to restaurant counter clerks — with on-line information.

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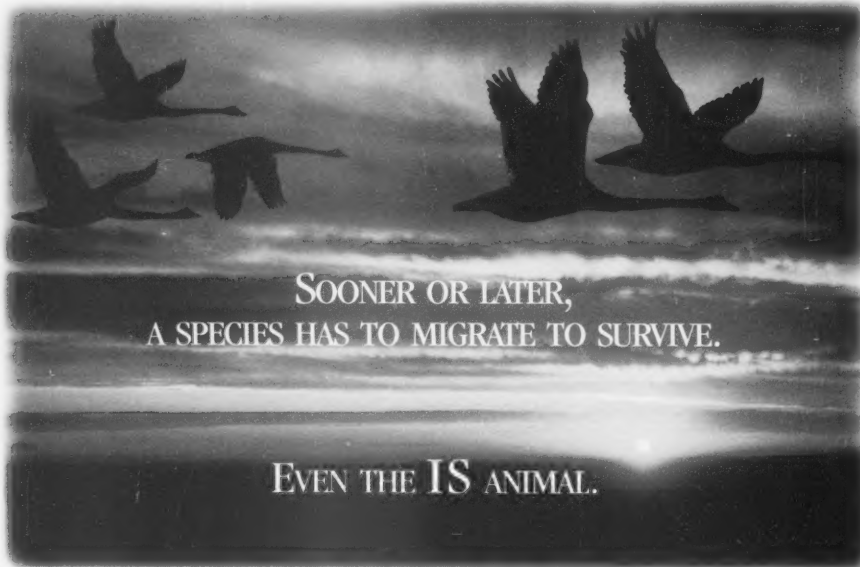
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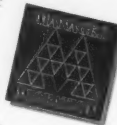


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RACAL

Communicating through technology



Since Boston Chicken was founded in 1991, IS has been at the heart of the company, and Harreld — a former senior IS executive at Kraft General Foods, Inc. — credits this for a healthy portion of its phenomenal success.

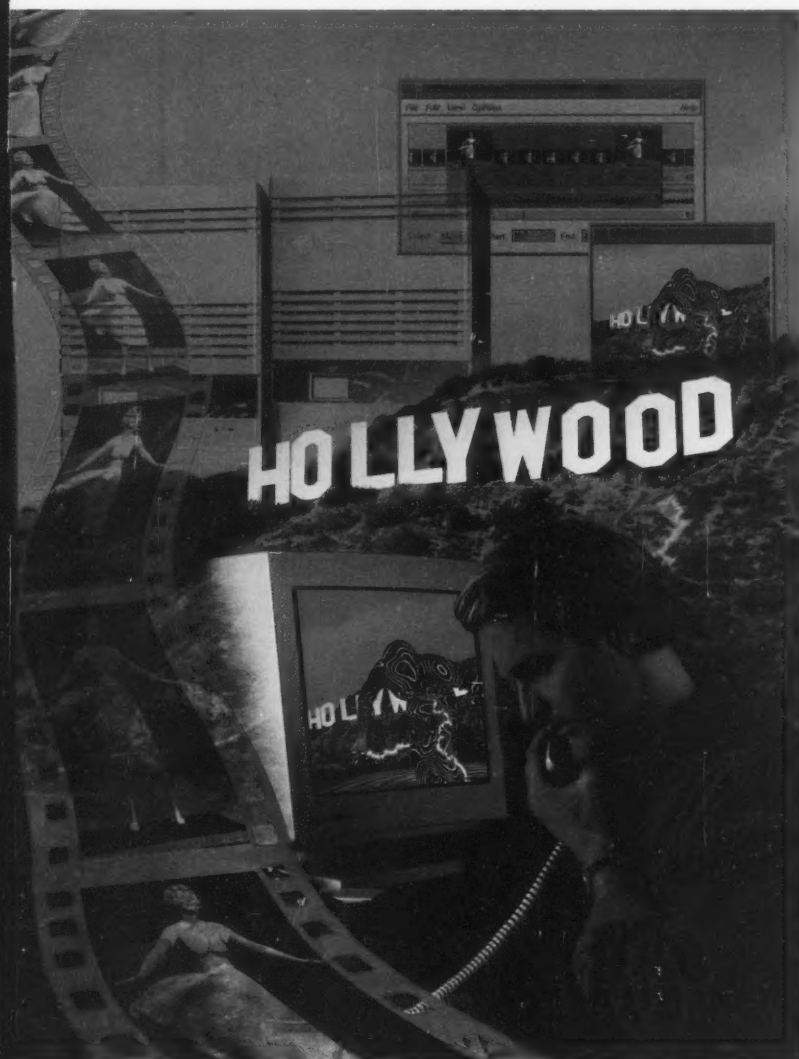
Growing and growing

In a little more than three years, the company has grown from a dozen or so restaurants in the Boston area to more than 400 outlets nationwide. Today, it continues to expand at a rate of one new store a day. By year's end, it will also have increased annual revenue by more than 100%, from \$154 million last year to \$340 million. For all of these reasons, *Fortune* magazine ranked Boston Chicken among the nation's fastest-growing companies.

On the IS side, the company's track record is equally impressive. In the past year, a development team of 35 IS staffers and 65 outside consultants rolled out a Unix-based client/server system to which the store-based systems will be tied. Lotus' Notes databases enable teams of geographically dispersed managers to brainstorm about things such as new menus. To determine the best locations for new restaurants, company real estate scouts use laptop PCs outfitted with geographical IS software.

"We're just one big wide-area network," Harreld said. If all goes according to plan, that network will just keep getting bigger, extending to 300 new stores every year for the next three years.

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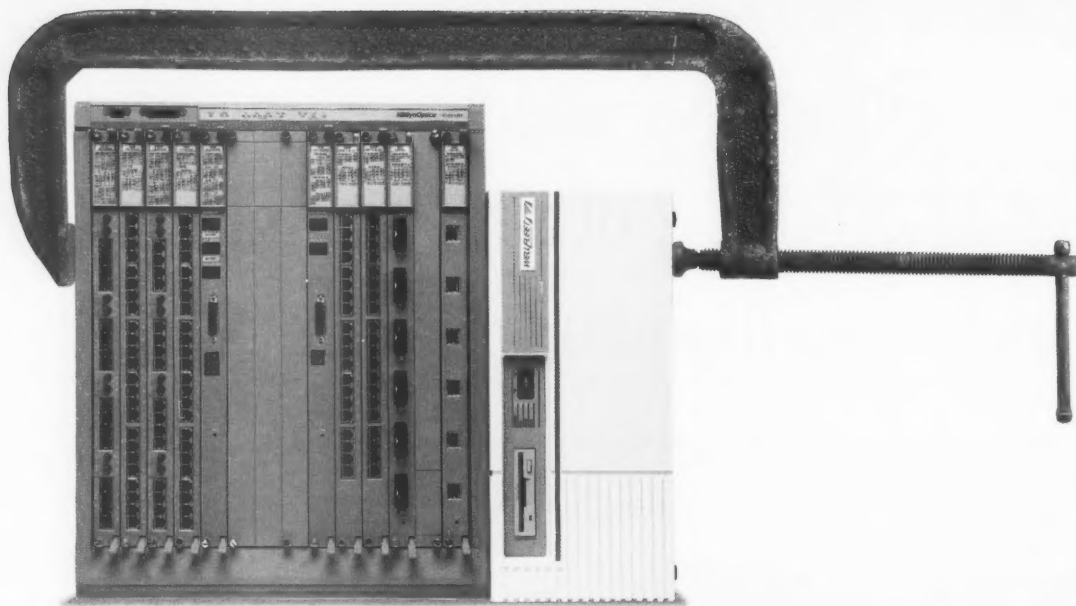
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Business

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MERGING TECHNOLOGIES

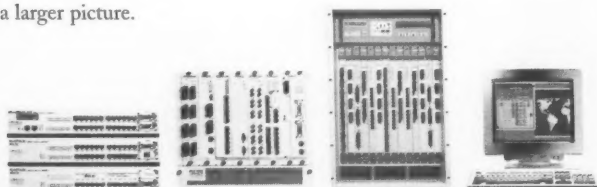
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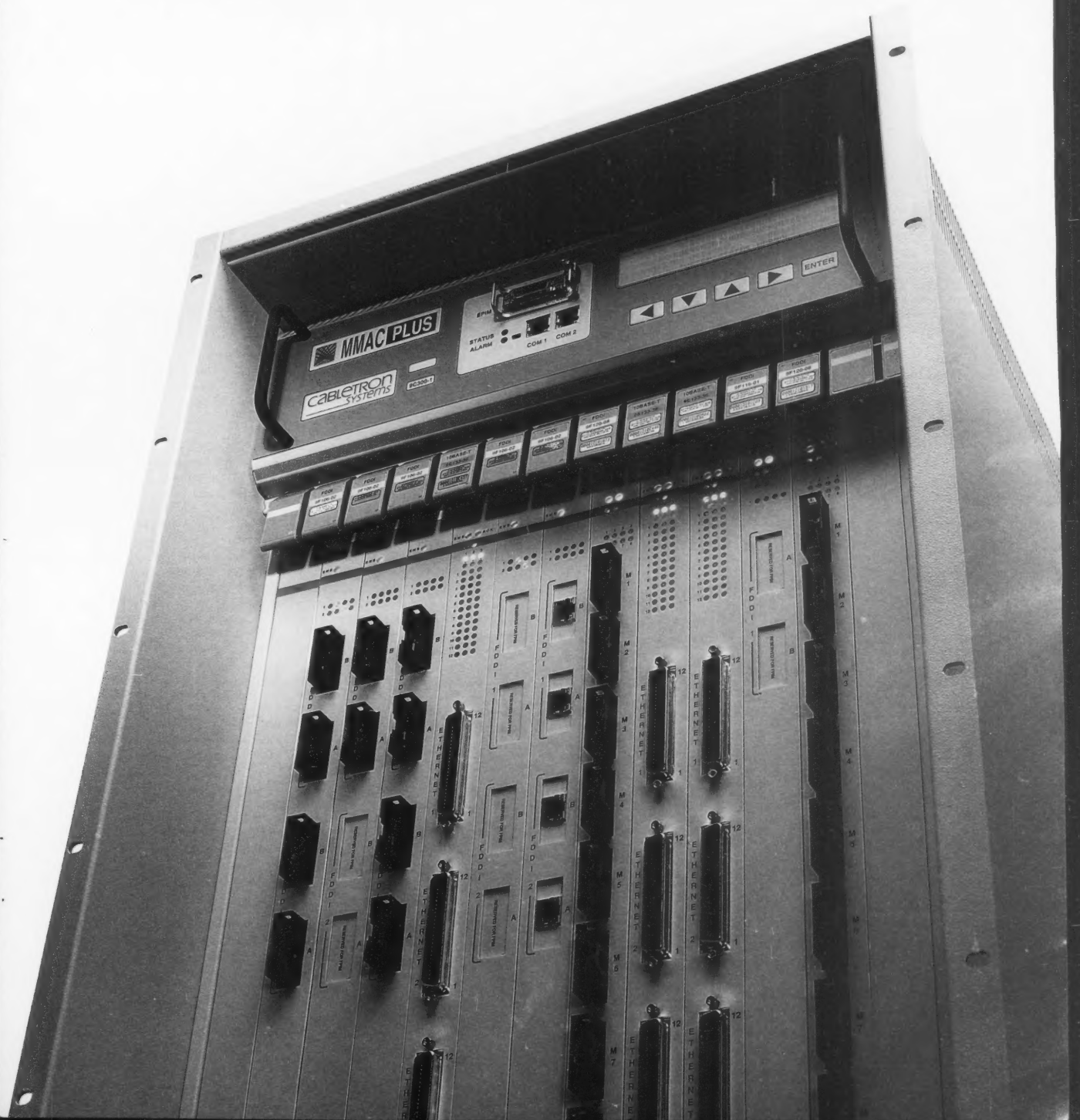
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Consumer groups seek access to 'bad lawyer' database

By Mitch Betts

Another bad-guy database is in the works. The American Bar Association (ABA) recently confirmed plans for a nationwide on-line database of censured and disbarred lawyers to catch those who skip from state to state.

But consumer groups are upset that the 25,000-name database, similar to one for doctors involved in malpractice cases, will not be open to the public.

"Consumers have a right to information about disciplinary problems and complaints so they can make informed decisions about the lawyers they hire," said Theresa Meehan Rudy, spokeswoman at HALT, a legal reform group in Washington.

The database will be a private section of the Westlaw on-line information service from West Publishing Co. in Eagan, Minn., this fall. State bar associations and disciplinary boards will use it to screen lawyers who move into their jurisdiction.

The Chicago-based ABA decided against public access because a slightly inaccurate listing could harm a lawyer's reputation and lead to a defamation lawsuit.

The database lacks a unique identification number for each attorney, so it is not always clear "whether the John M. Smith disciplined in state A is the same John M. Smith that's admitted in state B," explained ABA spokeswoman Mary Devlin.

But consumer advocates are not convinced. "Really it's a matter of self-protection [for the industry]. Consumers have access to information like this in other

fields, such as checking out businesses with the Better Business Bureau, and they should be able to do that with doctors and lawyers as well," Rudy said.

The ABA initiative is the latest in a string of national databases intended to track offenders of various sorts, from child abusers and quack doctors to noncustodial parents who fail to pay child support (see chart).

The issue of public ac-

cess has also plagued the National Practitioner Data Bank, a federal database of medical malpractice cases. By law, the database must be used by hospitals to screen doctors, but it is closed to the public.

Possible misunderstandings

Consumer advocates such as Public Citizen's Health Research Group in Washington want the database opened up. But the American Medical Association is vehemently opposed and even wants the data bank abolished. The association fears the public will misinterpret the data, for example, by tarring good doctors who decide to settle frivolous malpractice complaints.

"The paternalistic attitude of the medical profession, in denying consumers access because we supposedly would not know how to interpret the information, is self-serving and ridiculous," testified Laura Wittkin, executive director at the New York-based National Center for Patients' Rights, at a congressional hearing last year.

Because of the secrecy, "Americans have access to more product performance information when purchasing breakfast cereal than when choosing a heart surgeon," said U.S. Rep. Ron Wyden (D-Ore.). He recently introduced a bill requiring public disclosure of repeat offenders.

EXAMPLES OF NATIONAL "BAD-GUY" DATABASES INCLUDE THE FOLLOWING:

- **National Practitioner Data Bank, U.S. Department of Health and Human Services**
Includes 40,000 cases of malpractice or disciplinary actions against doctors and other medical professionals.
- **National Instant Criminal Background Check System, U.S. Department of Justice**
Required by the Brady Handgun Violence Protection Act of 1993 to restrict sales of handguns.
- **Child Support Enforcement Network (CSENet), U.S. Department of Health and Human Services**
An interstate network and distributed database that allows states to track the location of noncustodial parents who fail to pay child support.
- **National Child Protection Act of 1993 Administered by states**
New federal law that creates a database of all indictments and convictions on child abuse, sex offense, violent crime, arson and felony drug charges.

Digital cash solution sought

By Gary H. Anthes

None of the payment methods available today can adequately serve as "digital cash" in a distributed network environment, according to a coalition of information technology users and vendors.

The group — which includes 41 companies in banking, publishing, entertainment, telecommunications and computer software and hardware — recently unveiled a report dealing with the notion of electronic money on the coming National Information Infrastructure (NII).

The Cross-Industry Working Team also released another report outlining an architectural model for the NII, which it said would stimulate the development of user applications by unbundling and opening up access to network components.

"Existing [payment] mechanisms either assume that the parties will at some time be in each other's physical presence or that there will be a sufficient delay in the payment process for frauds, overdrafts and other undesirable conditions to be identified and corrected," noted the report, "Electronic Cash, Tokens and Payments in the NII."

Instant drawback

For example, when a credit card is used to purchase an airline ticket several days before the ticket's delivery, authorizations can be made in a timely way. But if the customer wants a digital airline ticket to be downloaded to a PC immediately, many messages must occur in real time, the working group said.

While such an elaborate setup may be cost-justified for airline ticketing, it may not be for transactions such as a \$3 pay-per-view movie, the group pointed out.

The electronic payments report raises, but does not attempt to answer, some

thorny issues. For example, who is liable when tokens are lost, stolen or counterfeited? Will users be assessed a fee when buying electronic tokens? Who, if anyone, will maintain records of digital cash flows?

Yet the report did set forth suggested requirements for a system of "electronic tokens" that could be stored on a user's card or computer and exchanged with remote parties over any kind of network. System requirements include user authentication, reliability and protection from fraud and privacy. The report also describes desirable optional features such as receipts and currency conversions.

Token dreams

"Electronic tokens would seem to fill a void in electronic commerce, particularly for casual buyers and sellers trying to conduct commerce like you would in a shopping mall," said Dan Schutzer, director of advanced technology at Citibank NA and a working group member. "I might want to purchase digital objects — movies, data, software and so forth — without any previous relationship" with the seller.

"We feel the NII has the potential to bring us new markets or roads into new markets," said team member Stephen Haynes, manager of Westlaw research and development at West Publishing Co. in Eagan, Minn. He outlined a scenario in which a researcher with an intelligent software agent on the Internet might find information of interest in a West Publishing database, then retrieve it and pay for it with an electronic cash token.

"We might require that all tokens have an ID attached to them so we know who has access to our information," Haynes said. "But other databases might permit anonymous transactions."

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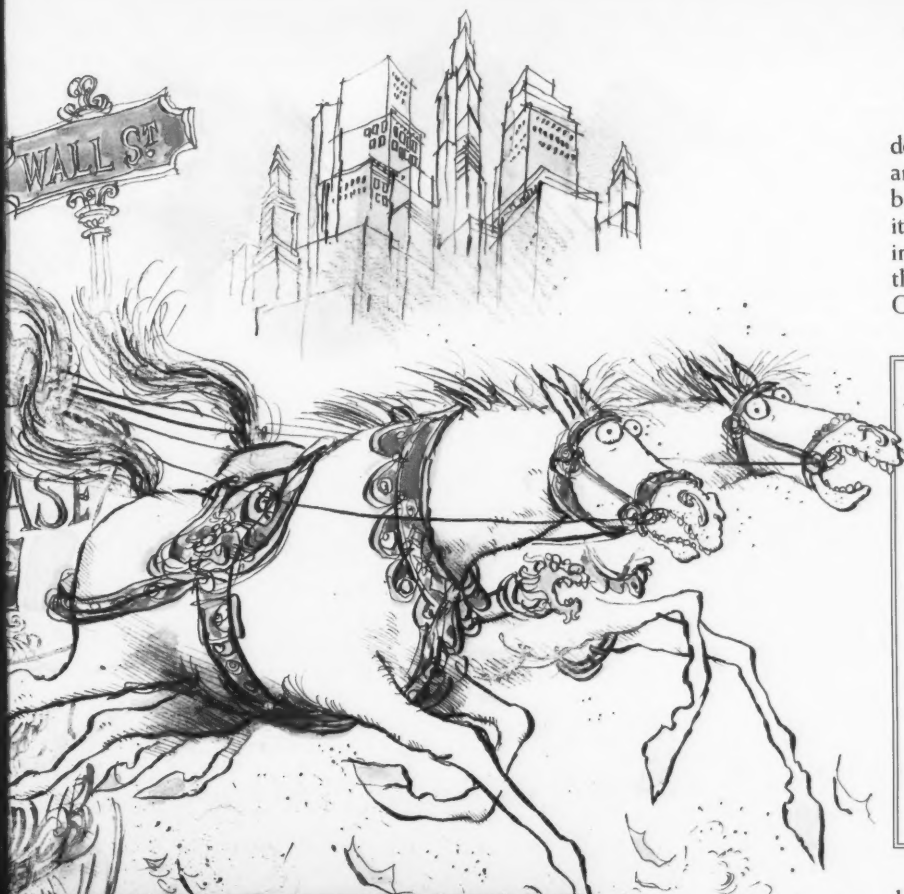
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— Jack Hazel, Senior Systems Analyst, Illinois Employee Benefits Corp.

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Gays in high tech

CONTINUED FROM PAGE 1

more supportive, on average, to their gay and lesbian employees," said Jonathan Rotenberg, founder of the Boston Computer Society (see box).

"Conformity [here] is less important than in typical corporate America," he added. "Being different from the norm is less of a concern ... and is even the norm."

Hullender noted, "Microsoft Corp. was the first place I ever worked where I was not the first openly gay person."

In other workplaces, the software engineer said, he felt doubly closeted. "At work you're in the closet about being gay ... and at the bars you're in the closet about being a technomerd," he said.

Beyond the social benefits of working at high-tech companies, gay and lesbian activists say the clubs and employee groups make it a top priority to push companies to provide domestic partner benefits in health and insurance coverage.

Lotus sets a trend

Lotus Development Corp., for instance, was the first U.S. company to offer domestic partner insurance benefits. Several other firms have followed.

Last July, Microsoft extended its health benefits to domestic partners. Its gay employee group, GLEAM (Gay and Lesbian Employees at Microsoft), is one of many at Silicon Valley firms.

"[But] there are [gay] employee groups at a lot of East Coast, blue-blood technology companies, too," noted Tom Rielly, a marketing executive at Radius, Inc. in Sunnyvale, Calif., and co-founder of Digital Queers. The 2-year-old San Francisco-based outfit provides computer hardware, software and consulting to gay and lesbian nonprofit groups.

Rielly's list of companies with such groups includes Eastman Kodak Co., Xerox Corp., IBM, AT&T Corp., Digital Equipment Corp. and Lotus, which is consistently rated among the most "gay-friendly" companies in the industry and the U.S.

"I didn't have to push for [recognition]," recalled Christopher Morgan, the first publicly gay officer at Lotus when he was hired in 1982 as the vice president of communications. The benefits policy was already in place. Morgan heads the computer technology interest group within the Greater Boston Business Council, a gay and lesbian professional organization.

Even companies that have been cool to gay issues in the past seem to have turned the corner. The employee group Gay, Lesbian or Bisexual at Lockheed, which existed at Lockheed Missiles and Space Co. in Sunnyvale despite management's disapproval, achieved official recognition last November.

Similar status was accorded the National Organization of Gay and Lesbian Scientists and Technical Professionals, Inc. in Pasadena, Calif., which in February gained affiliate status in the American Association for the Advancement of Science in Washington.

Support lacking

However, neither the Association for Computing Machinery nor the Institute of Electrical and Electronics Engineers, Inc. has a support group for homosexuals, according to officials at both professional organizations.

The story behind the formation of High Tech Gays illustrates the political tint of many of the groups.

"The aerospace industry in Silicon Valley required government security

clearances, and you were damned if you did [acknowledge sexual orientation] and if you didn't," Alfieri said. High Tech Gays came together to be part of a class action suit against the government's Defense Industrial Security Clearance Office; it successfully argued that sexual orientation inquiries for security clearance violated constitutional protections.

Successful lobbying efforts have led some of the best-known and oldest U.S. technology companies to update their employee manuals.

An early policy was at AT&T, which in 1975 added sexual orientation to its non-discrimination guideline for hiring and promotions. However, while the company has a gay support group with approximately 1,000 members in two dozen locations, it does not extend health care benefits to same-sex partners.

But there remain "exceptions in this exceptional industry," according to one gay activist. A recent lightning rod was the decision by Computer Associates International, Inc. not to retain the domestic partners benefit at The ASK Group, Inc. after it acquired the company in May.

CA's decision was blamed for the en masse resignation of more than 200 ASK engineers. A CA spokesman would not confirm the number of employees who left or the reason for their departure but said CA's benefit policy was "competitive" with the rest of the industry.

Opinions abound for why high-tech firms, especially those in the information systems arena, are progressive on gay issues.

The relative youth and demographics of many high-tech firms is a clear contributor, too. Don Nelson, a systems analyst at Lockheed, attributed such progressiveness to the early years of the industry — the renegade atmosphere, the keg parties and the laid-back management approach.

"This industry grew and developed by breaking the rules, by not doing business as usual," added Karen Wickre, co-founder of Digital Queers. "This affected a lot of personnel policies and human resource departments."



Greg Hullender: "Microsoft was the first place ... where I was not the first openly gay person"

Out of the closet and into networking

"The feedback from literally 100% of the people was uniformly positive," said Jonathan Rotenberg about his coming out in April 1991. Also supportive was the Boston Computer Society, the group he co-founded in 1977 at age 13.

Now a consultant at Cambridge, Mass.-based Monitor Co., Rotenberg said his highly public role at the Boston Computer Society and his youth made coming to terms with his sexual orientation all the more complicated. "I never really felt I had a private personal life," he said. He recalled with humor that in the midst of all the publicity, he was named "one of Boston's most eligible bachelors" in 1987.

Despite his struggle, Rotenberg said he questions the need to form a group within the computer society

targeted at gay and lesbian concerns. It would make more sense, for example, for the society to devote a group

to a technical subject such as RISC workstations, he said.

Regarding the now-defunct Gay Mac group that formed several years ago in Boston, "it never made sense to me as a concept," he said. More reasonable, he said, is for gay and lesbian groups to form computer groups for their members.

For instance, the Greater Boston Business Council, a gay and lesbian professional organization with substantial

representation among high-tech firms in the area, has a computer group. The technology group formed about a year ago and about 30 of the council's 700 members attend the monthly meetings. — Ellis Bookner



Jonathan Rotenberg questions need for computer groups targeted at gay and lesbian concerns

IBM moves into Warp speed with \$500M marketing plan

By Ed Scannell

IBM has committed to spending \$500 million worldwide to market and promote Warp, the upcoming version of OS/2, and related products over the next year. In the process, the company appears to be hunkering down for an all-out make-it-or-break-it effort.

In a recent speech, Lee Reiswig, president of IBM's Personal Software Products group, touted the budget of "half a billion" dollars. He said the decision to allocate such a huge sum was in part designed to remove any doubts critics have had in the past about the marketing commitment to OS/2.

"IBM is not playing around this time. They have a commitment from [Chairman Louis V.] Gerstner on down to make OS/2 successful, and now they are spending the sort of money that will make that possible," said Will Zachmann, president of Canopus Research, Inc. in Marshfield, Mass.

IBM will spend most of that budget on advertising during prime-time television shows, but it is also considering 30-minute "infomercials" to explain how the product works and tout its benefits compared with competing products.

Some critics questioned the overall effectiveness of TV advertising to convey anything more than a corporate image to viewers. "I don't think IBM will ever understand that OS/2 is not a consumer product," said Jeff Tarter, editor of "Soft-Letter" in Watertown, Mass.

Others said no amount of promotional dollars will help OS/2 break out of its niche status against Microsoft Corp.'s Windows unless IBM first fixes what critics say are more pressing problems — such as the lack of 32-bit, operating system-specific applications.

Other options

"If they want to spend that much money, why not buy a couple of large [applications] companies with OS/2 apps and take care of that problem once and for all?" said Rich Finkelstein, president of Performance Computing, Inc., a consultancy in Chicago. "Time is running out for them to build a case for this product."

"The launch efforts are real expensive when you go after the broad-based market. They will need some big returns, maybe an order of magnitude higher in sales than they are doing now to stay afloat," said Michael Gould, a software analyst at the Patricia Seybold Group in Boston.

But Finkelstein and others also said the money may be well spent if Microsoft continues to have trouble developing and delivering Windows 95, now not expected until next year's first quarter. Windows 95 is the next release of Windows.

Archival Microsoft has committed to a budget of \$100 million for its fiscal year, most of which will be spent on prime-time TV ads to promote brand awareness, according to Wieden & Kennedy, Microsoft's advertising agency, and Microsoft Vice President James Allchin.

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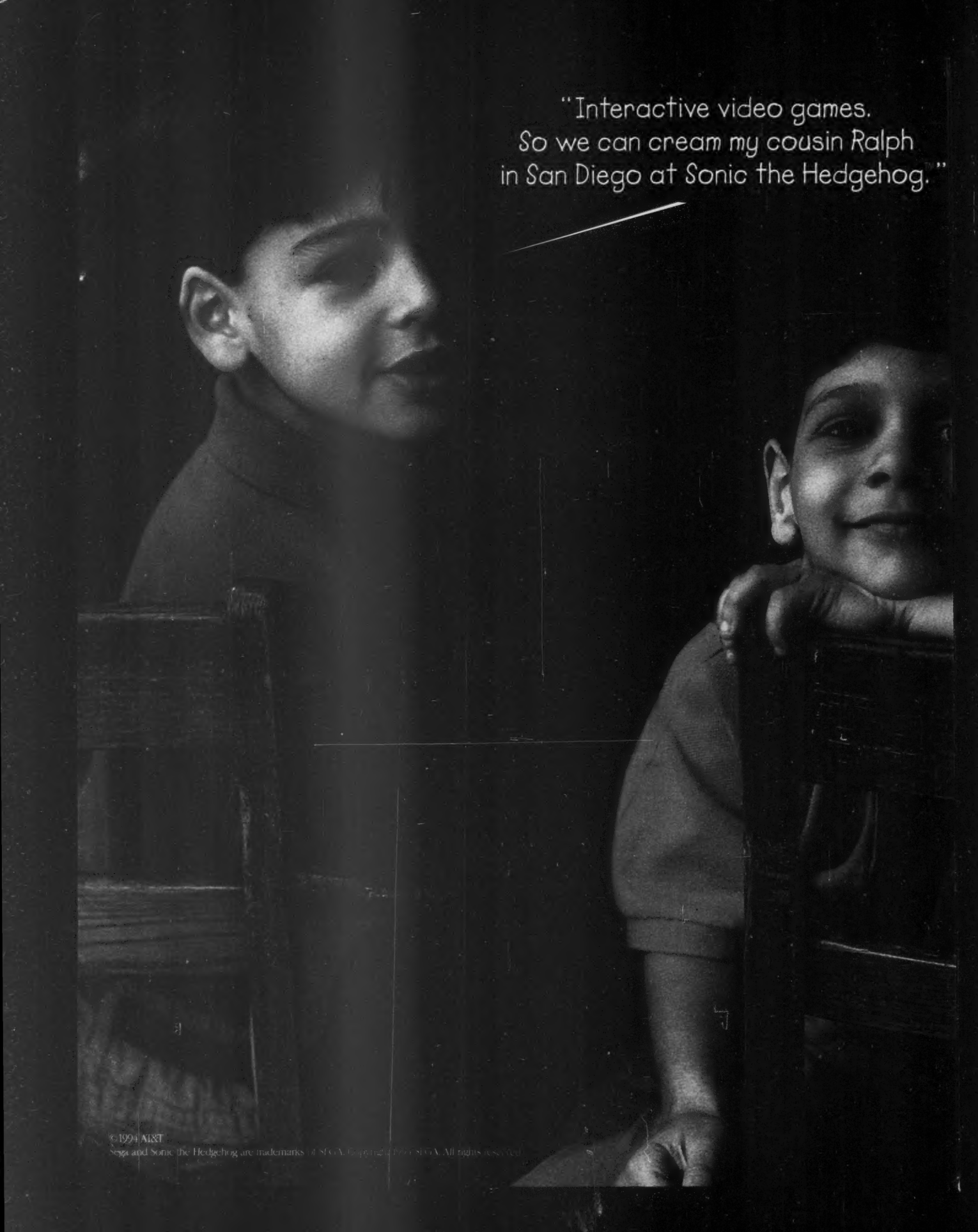
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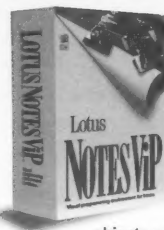
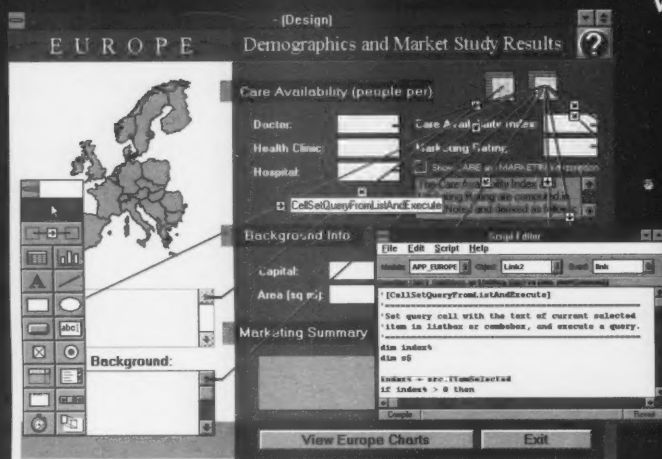
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Computer Industry

Briefs

Apple loses appeal

A federal appeals court upheld a lower court ruling that **Microsoft Corp.** and **Hewlett-Packard Co.** did not violate the copyright of **Apple Computer, Inc.**'s Macintosh user interface. The court is still evaluating HP's request for attorneys' fees.

3Com results glow

3Com Corp. in Santa Clara, Calif., announced revenue of \$249.3 million and a \$28.5 million profit for its first quarter, ended Aug. 31. During the same period last year, the networking vendor posted \$162.1 million in revenue and a profit of \$13.4 million. Also, to bolster Asynchronous Transfer Mode development, 3Com will acquire **NiceCom Ltd.** in Tel Aviv for \$58.5 million.

Kendall Square sinks

One month after **Thinking Machines Corp.** in Cambridge, Mass., pulled the plug on its massively parallel processors, neighbor **Kendall Square Research Corp.** in Waltham, Mass., has followed suit. Kendall Square, which is still reeling from its admission last fall that it misstated sales, said it will stop building its KSR/Series systems and lay off 130 of its 180 employees. The company will try to stay afloat by licensing its technology but said a Chapter 11 filing is possible.

Adobe profits up

Adobe Systems, Inc. in Mountain View, Calif., reported \$18.1 million in profits for its third quarter ended Aug. 26, compared with a profit of \$11.4 million for the same period last year. Revenue rose to \$88.4 million from \$78.8 million for the third quarter last year.

SHORT TAKE Cray Research, Inc. in Eagan, Minn., has acquired **Savant Systems**, a Dallas-based database and on-line transaction processing consulting firm.

Compaq/Intel conflict flares

PC leader airs complaints, threatens to buy more chips from rival suppliers

By Jaikumar Vijayan

Shape up or chip out! After months of simmering discord between the companies, that could be Compaq Computer Corp.'s latest message to Intel Corp.

In the first public vocalization of the growing discord between the companies, Compaq Chief Executive Officer Eckhard Pfeiffer recently listed a litany of complaints against the chip monolith that could signal the beginning of the end of their relationship, according to observers.

The remarks come at a time when other leading desktop vendors, including IBM PC Co. and AST Research, Inc., are also reportedly looking at other sources for their processors, analysts said.

The discord also highlights growing competition in the desktop PC chip market, where Intel no longer has a lock.

Even though Compaq is one of Intel's largest chip customers, several of its Presario and ProLinea consumer models are already powered by rival Advanced Micro Devices, Inc.'s chips. Moreover, a shift to these processors could speed up as AMD ramps up production. Compaq and AMD have a joint manufacturing agreement.

In remarks at an industry conference in Spain two weeks ago, Pfeiffer threatened to buy more chips from rival manufacturers because of continued differences with

Intel over its branding strategy and some pricing issues.

Pfeiffer's remarks "are really an indication of how bad the whole relationship has gone. Compaq seems to be laying the ground for a shift away from Intel," said Linley Gwennap, editor of the "Microprocessor Report" in Sebastopol, Calif.

Intel offside?

According to a Compaq spokesman, the chip maker's "Intel inside" campaign, which includes sticking those labels on all Intel-based systems, detracts from the company's engineering and development efforts. Launched in April 1991, Intel's campaign has erroneously fostered the impression that the chip is the only component customers need to worry about, according to Compaq.

Another sticking point has been Intel's strategy of selling fully configured Pentium motherboards to major Compaq rivals such as Gateway 2000, Inc. and Dell Computer Corp. as well as several other smaller second- and third-tier vendors.

While vendors such as Compaq, IBM PC Co. and AST have been designing Pentium motherboards from the ground up, scores of low-cost vendors have been able to slap together Pentium-based systems with Intel motherboards much faster and much cheaper.

"Intel is basically allowing anybody with a screwdriver to compete with Compaq.

Top-tier vendors like Compaq have invested a lot of money in engineering, and Intel's strategy takes everything away from this effort," Gwennap said.

Unlike the window of opportunity it had with the earlier i486-class processor, Compaq and some leading vendors with Pentium have been unable to profitably leverage their engineering investments, adding fuel to the fire, analysts said.

Observers also said Compaq may be chafing because it is not getting preferred pricing treatment from Intel despite its status.

Dismissing such notions as being unrealistic, an Intel spokeswoman said, "I gather from reports that Compaq thinks it is not being rewarded enough for being our largest customer... [but] our policy is to maintain a level playing field with all of our customers." She suggested Intel would continue its market strategies and would not be restricted by its differences with Compaq.

Changing winds

Though Intel continues to be Compaq's primary chip supplier, the situation could change during the next year as AMD ramps up production. A new 0.5 micron manufacturing process, which is expected in the first quarter, and increased capacity from its manufacturing agreement with Digital Equipment Corp. could increase AMD chip production.



Lotus buys Notes programming 'Edge'

By Lynda Radosevich

■ **Lotus Development Corp.** last week acquired tiny tools vendor **Edge Research, Inc.** in Portsmouth, N.H., for an undisclosed sum. The deal is meant to help Lotus improve its stock of Notes application development software and is not expected to affect its 1994 earnings.

Edge, a 1-year-old six-person company, is now a wholly owned subsidiary of Lotus and will continue to operate from its Portsmouth offices. Edge President Mark Klein will continue to manage the company, and no layoffs are expected.

The purchase should help Lotus' quest to establish Notes as an application development platform by offering developers more programming choices. Specifically, Edge can help Lotus give Microsoft Corp. Visual Basic programmers access to Notes data. It also offers C programmers easier Notes application programming interfaces (API).

This summer, Lotus provided Notes VIP and Notes SQL for developing custom Notes interfaces and access to SQL data, respectively. However, those products leave some development bases uncovered, which Edge can help cover.

Edge makes C++ class libraries that function as packages of API calls for Notes. The APIs let Notes developers more easily create custom applications using fewer lines of code than they would using Lotus' current Notes API.

Also key is that Edge makes Visual Basic controls (VBX), which developers use to create custom Windows front-end applications that can access Notes and other programs' data. Lotus officials said they plan



Edge President Mark Klein will continue to manage the firm

to integrate Edge's API and Notes' API with a consistent interface and object models soon. Lotus also plans to enhance Edge's VBX technology and use Edge's expertise to build Object Linking and Embedding Custom Controls (OCX) for Notes. OCX is Microsoft's next generation of Visual Basic objects.

Rizwan Virk, president of Edge competitor Brainstorm Technologies, Inc. in Cambridge, Mass., said the purchase confirms the

importance of third-party development tools as Notes moves beyond being a pilot project at most companies. Brainstorm is better known for its Visual Basic support for Notes than Edge is, analysts said.

Editorial

Stay out of the way

A few years ago, *Computerworld* sponsored the Great Debate in which the federal government's role in high-tech policy matters was thrashed out.

To me, the most compelling argument was made by a senior software industry executive who preferred that the feds confine their role to policies that make capital available at reasonable cost. That done, he argued, American capitalism and entrepreneurialism would take over, turning great ideas into products and creating thousands of new jobs and new wealth.

Within the next month, our beltway buddies may act on the most significant telecommunications policy reform in history. At the foundation of the reform proposals lurks the government's role in the development of the information superhighway.

Though it is fundamentally unclear what the infobahn is or will be, the intended role of the Clinton administration is easier to see.

At a high-level computer conference last week, one of the administration's information policy wonks outlined the major goals the president would like to achieve with the infobahn construction. They include the following:

- That companies be able to provide any service to any customer. (Read: total competitive warfare, which is always healthy.)
- Universal service. (Uh-oh. Who will pay for this?)
- Open access to any service provider.
- "Flexible" regulations. (Degree and direction of flex will undoubtedly be directly proportional to the prevailing political winds of the time.)

You can argue most of these points as easily as you can argue over motherhood and quality education. Open competition would be wonderful, but the wonk hedged when asked how soon it could be imposed, saying it could take "a year or two."

But the policy's more troublesome parts involve what the government means or intends by universal service and open access. "Why shouldn't a vendor want to reach out to a remote user in Montana to sell some service?" the policy maker asked.

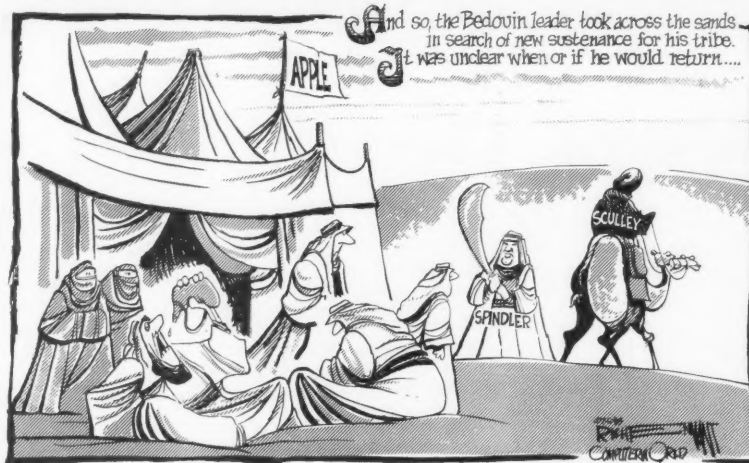
Well, maybe because it will cost too much to build the off-ramps to some parts of the country, and there may be better and more efficient ways to reach some users than by taxing the rest of the system to pay for this open access.

And to what extent will the infobahn construction, which the private sector will surely fund, be contingent upon compliance with a plethora of federal regulations, many of which smell like info-welfare?

Whatever the case, it was clear the high-level audience had one almost unanimous message for the administration regarding the infobahn: Let us do it. Provide us with access to the means (such as the capital) and protect us from illegal competition. Then butt out. Sounds like some timeless advice to me.

Bill Laberis

Bill Laberis, Editor in Chief
Internet: blaberis@cw.com



Rich Tennant is on sabbatical. This is one of his classic cartoons from 1993.

Letters to the editor

Mixing high and low

The misuse of terminology by a respected newspaper such as *Computerworld* helps spread misuse by readers. "Firing Line: DEC's Alpha 2100 — Impressed by speed, users look for proof of reliability, interoperability" [CW, Aug. 29] contains a phrase — "high price/performance" — that means the exact opposite of the writer's intention.

"Price/performance" is a ratio of the cost of a product divided by a performance metric. Thus, a product with a high price/performance ratio is one for buyers to avoid — relatively high price, low performance. The Alpha 2100 has a low price/performance ratio.

Kenneth Nellis
Washington

Management tool ahead of its time

Imagine my surprise to read that no tool exists to manage software and PC assets across an enterprise ("PC tracking busts budgets," CW, Aug. 15). My company is using such a tool — Enterprise Desktop Manager (EDM) offered by Novadigm in Mahwah, N.J.

A myriad of differences and customizations (drive mappings, logical directory structures, memory

organization, BIOS differences, etc.) presents a significant challenge to the management of a distributed environment. I have found that EDM provides the means to centrally collect, distribute and manage this information for each workstation wherever located — LAN-connected or not — whatever the differences. We use the product to distribute software, collect PC asset management information and automate application data file distribution and collection.

We can expect tools to become better over time, but some companies aren't waiting.

Thomas Hennessy
Apprise Corp.
Morristown, N.J.

Distributing the credit at Amoco

Statements about Amoco Corp. in "Big Oil overhauls IS role" [CW, Aug. 22] are somewhat misleading.

The story implies that Amoco's Information Services is currently providing decentralized support for distributed computing. In fact, it still predominantly supports legacy mainframe systems.

The story also suggests that Amoco has been moving to distributed computing for only three years; Amoco Production Co. (APC), the exploration and production operating company under Amoco Corp., started moving to distributed computing eight years ago.

The impetus toward distributed computing was the utter failure of corporate information systems to

support the computing needs of exploration efforts. Corporate IS had a rigid structure geared more toward saving IS thousands of dollars than enabling APC to generate billions of oil/gas dollars. Bureaucratic delays of nine months or more to obtain \$50,000 in hardware — while oil and gas leases worth millions of dollars expired because of insufficient investigation time — were common.

With the advent of Unix workstations, Amoco explorationists broke out of the glass house. Only after distributed computing was a *fait accompli* within APC did IS start a project declaring distributed computing a success and claiming it as its own. At Amoco, "shared services" is computing being given back to those who would not recognize that their customers were moving to distributed computing.

God help us.

Brian Richardson
Geologist, Unix and geological applications support,
Oracle database administrator
Amoco Offshore Business Unit
New Orleans



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Viewpoint

Client/server countdown

Michael K. Sutton

The stampede toward LAN technology makes the Oklahoma Land Rush seem like a leisurely stroll in the park.

Of course, distributed systems has a vocabulary all its own, but in true technostyle, the terms are drier than the Sahara after a drought. So in an effort to spice up the lingo and provide a little food for thought, here are some new additions to the LAnguage:

10. LANcelot. The executive responsible for a corporation's distributed computing policies and controls (often an oxymoron), aka King of the Token Ring.

9. LANded Gentry. Often a middle manager responsible for, but not necessarily in control of, distributed computing activities such as backup and recovery. People charged with these duties are frequently found playing a binary version of "Where's Waldo."

8. LANtern. Something carried by Diogenes-like people trying to tabulate the costs of client/

server. For example: the cost of having an executive spend time managing his hard disk, aka The Six-Figure Storage Administrator.

7. LANeed. The stabbing sensation felt when the hourglass icon won't go away, and none of the last two hours' work has been saved. This usually occurs at or near the deadline for some project that had the ability to accelerate the career of the slack-jawed, drooling person now staring at the screen.

6. LANGuide. The drooping, exhausted feeling following a deadly embrace between any number of underdeveloped, oversold and undersupported programs. These "user-hostile" software piranha often prove O'Tool's Theorem on Murphy's Law that states: "Murphy was an optimist."

5. LANyard. A strong line used to fashion a noose for the purpose of hanging someone (often driven by the rage and frustration associated with resolving software problems). This emotion is usually triggered by speaking to a string of different vendors whose support staffs create a spin

loop of "denial," each blaming the bug on someone else's product. (This practice was such a popular pastime in the mainframe environment that it couldn't be left behind.)

4. LANDslide. The smothering realization that the accounts receivable database, residing on the server directly under the broken sprinkler pipe, hasn't been backed up in six months. These types of situations have been known to put LANcelots and LANded Gentry onto LANDING craft headed for the LANd mine-littered Unemployment Beach.

3. LANDfill. The place that could easily be consumed by the products entering the market every week.

2. LANd poor. Devoting so much of a budget to keep a distributed system alive that there's no money to improve it. This happens when distributed systems are not well planned.

1. LANG syne. Usually sung in the following context: "Should auld acquaintance be forgot..." Heard frequently after normal business hours when employees reminisce about the availability, reliability and predictability of host-based applications.

Sutton is president of Gaithersburg, Md.-based Washington Systems Consulting, Inc., which specializes in planning, implementation and exploitation of large and client/server systems.



Buying suites is trickier than you think

John Gantz

The economics of buying software in bundles — Microsoft's Office, Lotus' SmartSuite, WordPerfect's PerfectOffice — are clear. You get lots of good software cheap. Some is so cheap you even throw it away. But you should be clear about what you're getting for your money when purchasing software as if it were 10-packs of breakfast cereal.

I think the concept of the office suite was dreamed up by some devious marketing types at Microsoft solely as a smoke screen for a first-strike salvo in a software price war. One that would leave Microsoft, given its market share, with an "acceptable" number of casualties.

The tactic worked. One of every two Windows spreadsheets or word processors is sold through software suites; more presentation graphics packages are sold through suites than stand-alone applications; average system prices for products in the suites have fallen to 50% of their value two years ago; and Microsoft's market share is higher in suites than in the stand-alone products.

If my theory is correct, all the other goodies that are supposed to come with suites are afterthoughts, stuff that has to be attended to now that suites are products in their own right, not just bundling arrangements. If you are a buyer or potential buyer of an office suite, you need to know this. You also need to know that there are hidden costs in buying an office suite.

There is no free lunch.

For instance, there are conversion costs if you are going to use any of the secondary packages in the suite. With conversion, we're talking new costs in training, support, application development and logistics. Also, there is a cost for not using the secondary packages. You might also end up buying more hardware to get your money's worth from the software.

Then there's the cost of picking the wrong suite. The economics of buying a particular suite will vary considerably. For example, if you have a lot of happy WordPerfect for DOS users and migrate to Microsoft Office to get Word and Excel for Windows, you may be penny-wise and pound-foolish. You might be better off moving in the hooks that will let Excel work with WordPerfect's suite.

If you're running in a Novell NetWare environment, PerfectOffice should be even more appealing. But if you've already standardized on Excel, Word, Powerpoint and Access, why not go full steam ahead with Microsoft Office?

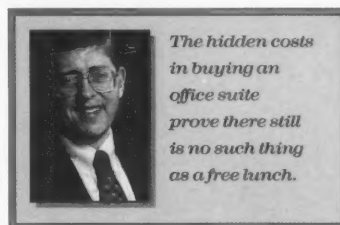
Now that suites are an accepted — or preferred — packaging method, vendors are

forced to compete on attributes other than price and availability. For example, WordPerfect has made productivity enhancements with PerfectOffice 4.0 that blow away Microsoft Office. And both SmartSuite and PerfectOffice work with Microsoft's Object Linking and Embedding better than Microsoft products.

When comparing suites, you'd better dig deep into the underlying technology because it varies widely and can affect personal productivity and the level of true integration of the packages.

The final cost will come several years from now when fixed product suites are passe and you're back to buying packages one at a time or in compatible bundles of products from different vendors.

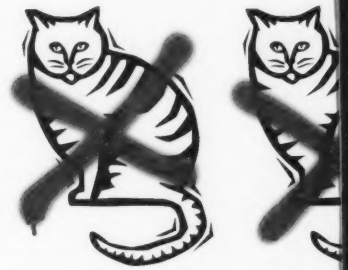
You'll have those conversion costs again, not to mention increases in overhead for testing and evaluation. Getting locked into a particular vendor, the raison d'être of suites, always has its downstream price.



Gantz is senior vice president at International Data Corp. in Framingham, Mass. He is responsible for all research and consulting in desktop automation and workgroup and office computing.



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Desktop Computing

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Operating systems

OS/2 pays dividends to faithful bank user

By Ed Scannell

You would have to say he is a man of conviction. Despite the massive hype for Windows generated by Microsoft Corp.'s marketing machine during the past several years, Judge Fowler, director of systems development at First Union National Bank, has never lost faith in IBM's OS/2, come good days and bad.

The bank first looked at beta copies of OS/2 1.0 in 1986 and soon after declared it a standard. Since then, First Union has deployed nine commercial and imaging applications under OS/2. The bank now has approximately 6,000 OS/2 desktop systems, although that figure could swell to 10,000 in the next year or two.

Popular choice

"The technology people here have come and thanked me for sticking with OS/2. The way competing technologies leapfrog each other these days I really think we are better off not changing," Fowler said.

Two new projects, called the Commercial Banking Solution (CBS) and the Corporate Call Center (CCC), will begin rolling out late this

OS/2, page 46



First Union's Judge Fowler: 'Putting up with the short-term problems [OS/2] presents are worth it'

ON SITE

First Union National Bank
Charlotte, N.C.

Goal: To establish a series of client/server applications in several areas of the business.

Strategy: The bank has standardized on OS/2 on the desktop, NetWare 3.x on servers and has five 3090-class Amdahl mainframes.

Results: The bank has created new revenue-generating possibilities and can turn business around more quickly with help from several new applications. (Two more applications are coming soon.) The IS department's development time has also been reduced.

NT packages on the way

Microsoft to ship 32-bit versions of Word 6.0, Excel 5.0

By Stuart J. Johnston
REDMOND, WASH.

■ Users who complained about running 16-bit versions of Microsoft Corp.'s applications under Windows NT may finally have a reason to quit griping, according to beta testers of one of the company's upcoming 32-bit applications.

Within 30 days of the shipment of Daytona, called Windows NT 3.5, Microsoft will ship its first 32-bit desktop productivity applications for NT, company officials said.

"The beta version [of Word 6.0 for NT] is faster [than the 16-bit version], even on a slow machine," said Dennis Martin, a manager of software engineering at Storage Technology Corp., a vendor of storage devices in Louisville, Colo.

Martin's impressions were echoed by Scott Piper, a network analyst at Public Service Co. of Colorado in nearby Denver. "The 32-bit version of Word is about the same speed, in our experience, as the 16-bit version [running] under Windows for Workgroups," Piper said. He said he has tested the two versions on the same PC set up to boot under either operating system.

The 32-bit versions of Excel 5.0 and Word 6.0 will also feature support for NT's long file names and the ability to work with very large amounts of data, said Joan Morse, group product manager for Excel.

Key features

Both beta testers said users like the long file name support. "If we were to try to take that away now, we would have big problems with our users," Piper said. Martin said he appreciates the ability to look at the long names, even

from Unix machines across StorageTek's TCP/IP-based Ethernet network.

Another feature, the ability to have interoperability among applications using 16- and 32-bit versions of the Object Linking and Embedding 2.0 technology, allowed Public Service Co. to easily add the 32-bit versions to an application developed in-house. "We didn't have to make any changes, [which] was kind of a surprise," Piper said.

The NT version of Word also has multithreaded support for printing so it can print in the background while the user continues to work. Other than those differences and the performance advantages inherent in running 32-bit applications on a 32-bit system, the two applications are virtually identical to their 16-bit Windows counterparts, Morse said.

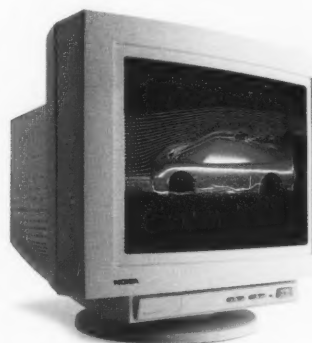
Neither beta user has seen the 32-bit version of Excel yet.

What it will cost

Excel and Word will cost \$339 separately, with competitive upgrades. Upgrading from an earlier version will cost \$129, Morse said. Owners of an individual application can upgrade to the Office suite, which will include a 16-bit version of the PowerPoint presentation package for \$299. That version of Office 4.2 will cost \$499.

Word 6.0 will initially ship for Intel Corp., Digital Equipment Corp. Alpha and Silicon Graphics, Inc. (SGI) Mips platforms, with a version for IBM's PowerPC to be available in the fourth quarter. Excel 5.0 will initially be available for Intel and Alpha architectures, with Mips and PowerPC versions to ship by the end of the year.

The two 32-bit applications will also run on the next beta version of Windows 95, called Windows NT, page 41



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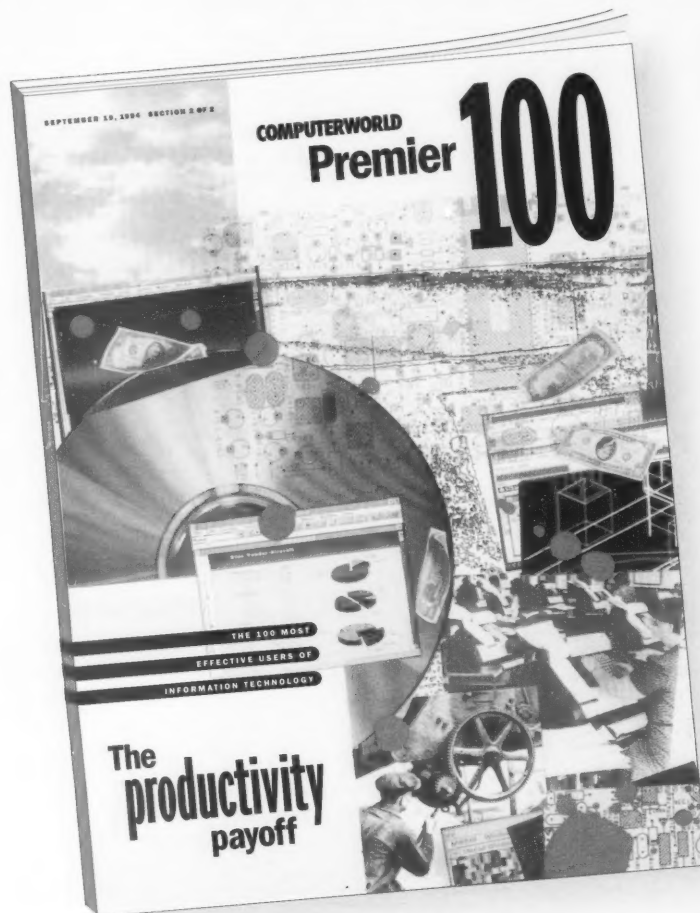
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| (b) Netware | (g) Windows |
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| (d) Unix | |
| App. Development Products | <input type="checkbox"/> Yes <input type="checkbox"/> No |
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- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/Refining/Agric.
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
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3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

- | | |
|---------------------------|--|
| Operating Systems | (e) Mac OS |
| (a) Solaris | (f) Windows NT |
| (b) Netware | (g) Windows |
| (c) OS/2 | (h) NeXTstep |
| (d) Unix | |
| App. Development Products | <input type="checkbox"/> Yes <input type="checkbox"/> No |
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Apple adds PowerPC to home computers

By Mark Halper

Apple Computer, Inc. next week hopes to start moving its future into the living room and classroom when for the first time it adds PowerPC-based models to its Performa line of home and education computers.

Apple has so far offered the PowerPC only in its Power Macintosh line, which is positioned for the corporate and business markets.

Although analysts and users said they expect the PowerPC Performas will have little direct impact on the corporate market, some noted that the Apple community will benefit simply because a broader PowerPC-based Apple market will encourage software development. The software market for native Power Macintoshes has been slow to develop.

"If the Performa takes off in volume, it will keep growing the software," said Kimball Brown, an analyst at Dataquest, Inc. in San Jose, Calif.

Each of the five models in the PowerPC-based Performa series will come bundled with a load of home, educational and games software, a CD-ROM drive and CDs of varying content, including Grolier's Multimedia Encyclopedia and the 1994 Time Almanac, according to Apple literature obtained by *Computerworld*.

Pricing will start at roughly \$2,600 for the Models 6110CD and 6112CD with 8M bytes of RAM and a 250M-byte hard drive. A Model 6118CD with 8M bytes of RAM and a 500M-byte hard drive will cost about \$2,850.

All models are built on the 60-MHz PowerPC 601, the same chip that drives the entry-level Power Macintosh 6100 series. Apple uses faster 601 processors in higher-end Power Macintoshes, topping out at 80 MHz on the 8100 series. The company is expected to bump high-end Power Macintosh speeds to between 100 MHz and 125 MHz in the next two months.

Apple declined to comment on the upcoming products.

Some of the Performa models will have the same hardware configuration but will differ in terms of software. For instance, the 6110CD and 6112CD, while sharing hardware specifications, will come with different software. The 6110, for example, will have Claris Corp.'s ClarisWorks 2.1.3, while the 6112 will have Microsoft Corp.'s Microsoft Works 4.0.

Home, but not office

Corporate users and analysts said the models should serve home users well but said the machines would not be appropriate for the corporate market because they will lack networking features and have limited system software.

John Grabrick, an information engineer at 3M Co., said Apple is disabling some of the System 7.5 operating system features essential for corporate environments.

"The Performa is made for the average user who does not have much experience with the box, so Apple kind of handcuffs them a little bit on the system software," Grabrick said. "It's locked and doesn't modify as easily, so the novice users can't shoot them-

Performa specs			
APPLE IS ADDING THREE POWERPC-BASED SYSTEMS TO ITS PERFORMA FAMILY			
Model	Memory	Storage	Price
6110CD	8M bytes	250M bytes	\$2,600
6112CD	8M bytes	250M bytes	\$2,600*
6115CD	8M bytes	350M bytes	\$2,700
*Differs from 6110CD in software; 6110CD bundled with ClarisWorks, 6112CD bundled with Microsoft Works			

selves in the foot."

Grabrick said the models will also be defined by the type of channel through which Apple will attempt to sell them. Some will be routed through mass merchandisers and others through computer superstores, he noted.

"We tend to stick with things that have Ethernet and things like that built in," said Rex Levie, a technical systems specialist at Kaiser Permanente Health Plan, Inc. in Pasadena, Calif., a large Macintosh shop.

Pieter Hartsook, editor of "The Hartsook Letter" in Alameda, Calif., said that although the \$2,600 price is higher than a low-end Power Macintosh, consumers may be willing to pay that much for a machine loaded with software and a CD-ROM drive.

"It may still be a little high at that price, but you'll probably see it at \$2,499 at Office Depot," Hartsook said.

At least one Apple user said he found the forthcoming PowerPC-based Performa series one more reason to be confused about Ap-

Averitable cornucopia

Software bundled in the various Performas includes the following:

ClarisWorks, MacGallery Clip Art Treasure Pak, Quicken 4.0, Kid Works, The Writing Center, American Heritage Dictionary, E-World, Spin Doctor Challenger, Spectre Challenger and Spaceway. CD-ROM titles include the following: Grolier's Multimedia Encyclopedia, 1994 Time Almanac, Family Doctor, San Diego Zoo Presents Animals, Around the World in 80 Days and Wacky Jacks CD Gameshow.

ple's product road map and the rumors about various faster speeds of 601-based Power Macintoshes, Power Macintoshes based on next-generation PowerPCs and Power Macintoshes with new bus technologies.

"It just adds to our confusion," said Greg Chirichigno, a systems analyst at Lockheed Corp. Chirichigno runs a network of about 200 Macintoshes, all of which are based on the older Motorola, Inc. 680x0 chip family.

"We're not buying any PowerPCs right now. We're probably going to wait until the next generation comes out sometime in March," Chirichigno said. Next-generation machines will stay current longer than today's models will, and he noted, by the time the new machines come out, there should be more choice of software written for the Power Macintosh.

IS still needed

And although IS directors are not planning corporate implementations, they are expecting involvement with end users.

"I get people who call me here at work saying, 'I've got Mary or Johnny going to college this fall,' and they'll want to know if they should buy one," Grabrick said.

Hartsook pointed out that by putting the PowerPC chip in the Performa line, Apple "reaffirmed its intention of moving all the products over to the PowerPC." Apple had sent mixed messages, he noted, when it introduced 680x0-based Quadras and Performas a few months after introducing its Power Macintosh line in March.

Windows NT

CONTINUED FROM PAGE 39

"M7," which is due this fall. After Windows 95 is released during the first half of next year, Microsoft will release updates that take advantage of its next-generation user interface. Those versions will replace the NT versions, "so you won't have two sets of applications," said Robbie Bach, group product manager for Microsoft Office.

Microsoft also released updated versions of its 16-bit Office and Office Professional suites, called 4.2C and 4.3C, respectively, to manufacturing this month. The updates provide code that supports Lotus Development Corp.'s Notes FX file exchange technology. Owners of the 4.x versions of the Office suites can obtain the upgrade for a \$5 shipping and handling charge.

Luring customers

Microsoft hopes Daytona will help jumpstart a move by corporate IS to use Windows NT further up the enterprise by offering the following:

- Two flavors: Windows NT Workstation 3.5 and NT Server 3.5.
- Improved scalability for machines with more than four processors.
- The ability to run on Intel processors, Digital Alpha AXP and SGI MIPS R4000 and soon on IBM PowerPC.
- Smaller memory footprint — 12M to 16M bytes of RAM instead of 21M bytes.
- Faster performance running both 16- and 32-bit applications.
- Better network support (32-bit drivers for Novell, Inc.'s NetWare, Banyan Systems, Inc.'s Vines, TCP/IP).
- SGI OpenGL three-dimensional graphics libraries.

—Stuart J. Johnston

Disk drives

HP grounds Kittyhawk module

By Mark Halper

In a reminder that whiz-bang technology is not always what the market wants, Hewlett-Packard Co. recently said it is discontinuing the world's smallest commercial disk drive, the 1.3-in. Kittyhawk Personal Storage Module.

Kittyhawk set off substantial industry hubbub when it was introduced two years ago. At that time, it represented a significant form factor reduction from the 1.8-in. size that was also in its infancy.

But HP was never able to advance its capacity beyond 40M bytes. And as the 1.8-in. drive advanced to 170M bytes, notebook users lost interest in the 1.3-in. product, said Jim Porter, president of Disk/Trend, Inc. in Mountain View, Calif. In fact, HP's own OmniBook subnotebook does not use Kittyhawk.

Furthermore, HP was counting on sell-

ing Kittyhawk into the personal digital assistant market, which has yet to materialize, Porter said.

"HP did a great job of designing the drive and establishing production, but this was a classic case of the new product guys talking themselves into a hypothesis of a market that didn't exist," he said.

HP lost one of its few customers earlier this year when Dauphin Technology, Inc. in Lombard, Ill., replaced Kittyhawk with larger 1.8-in. drives in its pen computer. "We needed more capacity than the Kittyhawk provided," said Pete Langas, Dauphin's executive director. To accommodate the larger 1.8-in. drive, Dauphin removed an Ethernet card and a fax modem from its product, he said.

Dauphin's next pen computer will accommodate a 1.8-in. drive using either one PCMCIA Type 3 card or two PCMCIA Type 2 cards, Langas said.



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Salespeople working out of briefcases access customer records in an instant; service technicians working out of panel trucks carry fewer spares; auditors migrating from customer site to customer site spend more time with clients.

Indeed, companies that routinely equip their mobile field workers with mobile computers reap significant productivity gains as a result.

These are some of the conclusions of a recent study of more than 400 large and medium-sized U.S. organizations involved in field force automation. The study was conducted by International Data Corporation (IDC), the world's lead-

ing information technology market research firm.

An in-depth summary is available in a special IDC White Paper on Field Force Automation (see box, bottom far right).

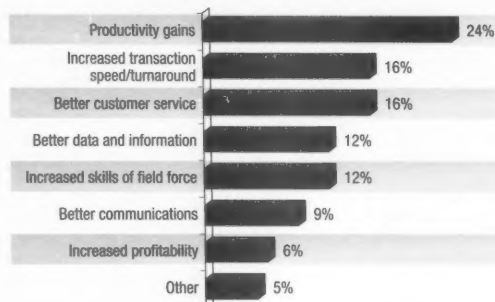
Organizations successfully automating their mobile field forces are reaping significant increases in productivity and gaining competitive advantage

Information technology professionals understand the challenge of automating mobile workers. Technical support, training, and system management are different for mobile workers than for their office-based peers. The autonomy of field workers makes implementing enterprise systems and procedures more complex.

According to the IT professionals polled, one of the challenges easiest to underestimate is field force resistance to change.

Figure 1 — Productivity Drives Field Force Automation

Mentioned as Top Benefit of Field Force Automation by IT Professionals
(Percent of 289 Total Mentions)



IDC Survey Results, Mid-1994, N=206

Study Findings

- Over 70% of large and medium-sized companies are in some phase of field force automation.
- IT professionals saw productivity improvements as the key benefit of field force automation.
- Over 25% of respondents feel they are ahead of their peer companies and gaining significant competitive advantage as a result.
- Almost 60% of the respondents feel their automation efforts had met or exceeded expectations.
- Key success factors include top management support, training, and a good working relationship between the departments involved.

The benefits of taking on the challenges of mobility, however, are clear, as illustrated in Figure 1. They extend from more service calls per day and more time with sales prospects to better customer service through improved order turnaround. Some companies also see direct financial returns, like increased revenue and profitability.

Keys to a Winning Implementation

If increased productivity is a key goal of field force automation, what are the key steps to achieving it? IDC asked those whose field force automation projects had exceeded expectations to rate critical success factors (see Figure 2).

Comparing their responses with the sample as a whole suggests that key factors that differentiate an implementation that exceeds expectations from one that merely meets them include top management support, clearly defined requirements, cooperation between IT professionals and end users, and hardware vendor support.

None of these factors exists in a vacuum. Field force automation requires a

systematic approach to application development, technology acquisition, training, support, and even internal selling. Most companies spend practically as much time in planning—almost half a year—as they do in the rollout of the application.

Although much of the software running on the mobile computers used by field forces is shrink-wrapped—word processing, spreadsheets, schedulers—much is custom developed. Developing a successful field force automation application requires all the rigor demanded by any enterprisewide, mission-critical application.

Working in Concert

Developing a field force application also means working in partnership with user departments. Obtaining top management support requires commitment from both IT professionals and end users; implementing the application requires ongoing cooperation. IT professionals and end-user department managers polled for the most part agreed on goals and benefits, but differed on some critical points:

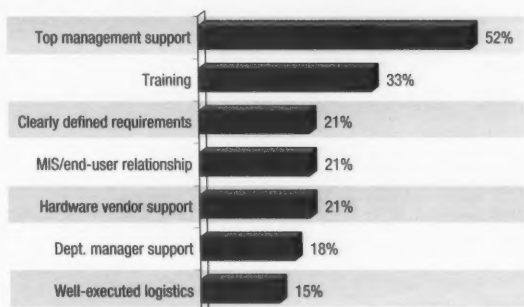
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Figure 2 — The Keys to Successful Field Force Automation

What to Pay Attention to in Implementing Field Force Automation
(Percent Mentioning of Those Whose Implementations Exceeded Expectations)



Multiple responses allowed

- User managers saw more need to improve communications with the field.
 - IT managers saw more need for cooperation with user departments.
 - IT managers were more worried about hardware availability.
 - User managers expected implementation to take 30% longer than MIS did.
- Finally, IT professionals tended to worry more about logistics, support, and technical issues—the areas in which study respondents most often ran into unexpected problems. Multiyear, multisite, multiversion applications are not easy to roll out.

Going Forward

Like any potentially mission-critical enterprise application, field force automation requires continual investment (see box, upper right). New employees must be trained, the appli-

cations expanded and upgraded, and new equipment installed.

New functional areas are also open for automation—70% of the companies interviewed were automating more than one functional area. The sales function is the most likely to be automated. Following sales are accounting/auditing then maintenance and repair. Other automated field activities include insurance claims adjusting, project consulting, mortgage lending, and field research.

The mission-critical nature of field force automation and the likelihood of continued application evolution lead to the final success factor: an organization's relationship with its supplier and its choice of technology. In field force automation, the supplier of notebook computers must be a full business partner.

The supplier needs to be in the market for the long haul. Its service and support must be up to mission-critical standards, its product line continually refreshed, and its reputation and viability as a company must be beyond concern.

It must also recognize the user's need for programmed upgrades, asset management, and ongoing logistical support. With the average field force automation project taking almost two years, from design through full rollout, several product generations may occur during the life of the project. The right vendor is geared for volume fulfillment and support across time and distance.

The computer itself must be reliable, portable, and available when and where needed. It must also have the connectivity to operate in an enterprise computing setting.

Only after a vendor and its products match these criteria should price enter the equation. The cost of the hardware is, after all, a small part of the total implementation cost.

The Call to Action

The paybacks reported by companies with automated field forces should motivate others to increase their own pace of automation. The success of field force automation relies on skills and experiences built over time, meaning it is essential to automate sooner rather than later. Organizations not automating or upgrading now run the risk of falling even further behind.

Maintaining the Edge

Once a field force automation application is up and running, success factors change. Leading-edge companies considered the following most critical:

- Continual upgrading of hardware and software: 31% of respondents
- Continual investment in training: 25%
- Ongoing support for end users: 20%
- Management support: 16%

If there's a single message, it's this: field force automation is no longer an experiment in technology. It's a mainstream way of doing business.

— John Gantz
Senior Vice President
International Data Corporation

This Insight was written independently by IDC and sponsored by Dell Computer Corporation. For a complimentary copy of IDC's full White Paper on Field Force Automation, please call Dell at 1-800-396-3040.

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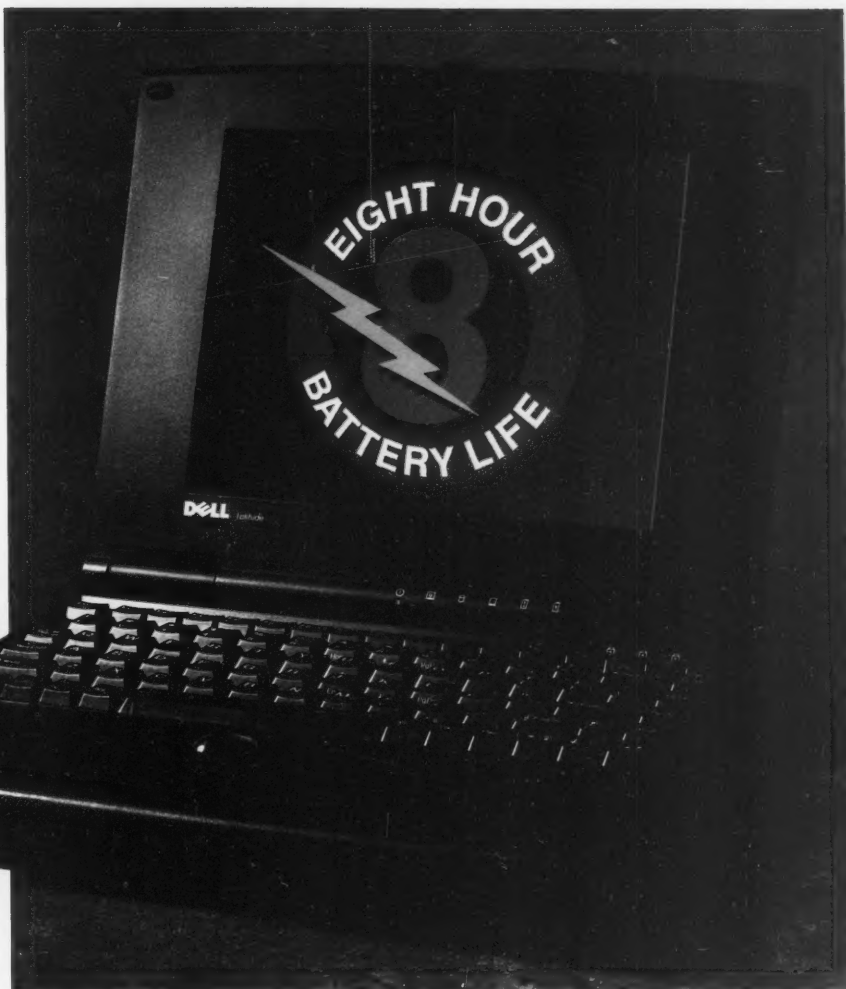
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OS/2

CONTINUED FROM PAGE 39

year and early next year.

CBS is intended to streamline the bank's loan process by allowing loan officers, now called relationship managers, to begin the loan process out in the field using IBM ThinkPads.

The managers can then send documents back to the home office where they are routed to several workers through a workflow application the bank has created. The workflow product features an in-basket and out-basket so workers can route documents to the next worker when they finish their tasks.

"The end result is we turn business around faster and get our relationship managers out more with customers," said Jeff Headley, a systems architect at First Union.

CCC allows customers to call a single number to get answers to questions about basic bank services and products. The application, which resides on an OS/2-based workstation, intelligently routes hundreds of thousands of calls over the course of a year to support people who can best answer the questions, Headley said.

Singing from the same sheet

From the start, Fowler has been a staunch believer in standards. First Union has acquired 20 or so banks in just two years. Its philosophy is to quickly convert those banks' information systems operations to be compatible with its own. Having standards in place makes the transition less expensive.

The compatibility of a bank's IS operations even plays a factor in whether First Union makes the acquisition. The bank has only two data centers in Charlotte, N.C., and Jacksonville, Fla., although for periods of six months or so, it may have three or four while the final financial terms of a merger are hammered out.

"We think we have put together a good blueprint or infrastructure that we can build and deliver applications on top of," said Jeff Scott, assistant director of enterprise architectures.

Case by case

Because First Union has established its infrastructure, it has flexibility in pursuing various client/server strategies.

"We have no one strategy to downsize in terms of an overall direction. But with a dependable infrastructure, we can now identify application problems as they come up and then figure out whatever it is we need to build," Scott said.

Currently, First Union has five 3090-class mainframes from Amdahl Corp. running its data centers using IBM's IMS and DB2 databases. It also uses IBM's CICS to conduct transaction processing.

The bank also has approximately 150 servers governed by Novell, Inc.'s NetWare 3.x and running on uniprocessor 486-based servers mostly from Compaq Computer Corp.

While Fowler's group is committed to OS/2 on the client side of its client/server

projects, it has evaluated Windows 3.x and Windows NT on several occasions. However, the group foresees compatibility problems with its legacy applications and takes issue with Windows 3.1's lack of true multitasking.

"We could have put Windows on the desktop and saved money on PC hardware costs, but the added expense of making it compatible with legacy apps would kill a lot of the financial incentive," Scott said.

Another drawback to Windows, and NT in particular, is that Microsoft's support was not up to snuff.

"The industrial-strength customer support infrastructure is just not there for NT. You'll call and get 20 minutes of Muzak instead," said Bill Barnett, a systems architect at First Union.

First Union's preference, however, is to take the long view of any hardware or software it buys, and so the short-term features war between OS/2 and Micro-

soft's upcoming Windows 95 is not a major concern.

Fowler's long-term objective is to have a bottom-end architecture that is chip- and software-independent. And with the various versions of OS/2 and what is expected to come from Taligent, Inc., he says OS/2 has the best chance to succeed.

"So putting up with the short-term problems [OS/2] presents are worth it in the long haul," Fowler said.

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Desktop Computing

AudioFile, Inc. has announced TalkWorks 2.1, voice messaging software.

According to the Lexington, Mass., company, TalkWorks 2.1 offers variable-speed playback, advanced editing, special effects, Microsoft Corp. Windows Sound System compatibility and compression rates of up to 36-to-1.

The product's AudioEditor lets users edit both compressed and uncompressed audio files with features that include silence trimming, volume adjustments and speed changes. The AudioRecorder feature lets users record, embed and play back audio files.

Users can choose the level of compression they desire based on disk space availability. The product will be compatible with Microsoft's Windows 95.

TalkWorks 2.1 costs \$59.

► **AudioFile**
(617) 863-0890

FTG Data Systems has announced PenDirect for Windows, which will be bundled with Future Labs, Inc.'s TalkShow Duo, a desktop conferencing system.

According to FTG in Stanton, Calif., the package provides a light-pen input system and point-to-point desktop conferencing software. Users can simultaneously communicate using direct, on-

line screen output by interactively reviewing documents, spreadsheets, designs or bit-map pictures.

The light pen lets users pull down menus, draw and select markers, pointers and highlighters, and handwrite messages with the stroke of a pen. The system also includes an external interface, Microsoft Corp.'s Pen Extensions for Windows for handwriting recognition, inking and gesture-based editing, a light-pen holder and cables.

PenDirect for Windows bundled with TalkShow Duo costs \$298.

► **FTG Data Systems**
(714) 995-3900

Planning Works, Inc. has announced ScoreKeeper, an executive information system for wireless communications.

According to the Columbus, Ohio, company, ScoreKeeper lets users retrieve data, enter new information, update previous data or handwrite notes directly on the screen, then send the information through fax or electronic mail.

The product provides time-series spreadsheets, a dynamic database, graphics, voice, video, text and page layout. It also tracks nonfinancial performance measurements, displays monthly sales results, analyzes balance sheets and plays CD-ROM video or voice recordings.

Prices range from \$295 to \$495.

► **Planning Works**
(614) 436-5300

Microboards, Inc. of America has announced PlayWrite 4000, a multiformat, multiplatform, quadruple-speed CD-recordable system.

According to the Carver, Minn., firm, the system can be used with a range of CD-ROM recording applications to master multimedia and CD titles, prepare multimedia presentations and develop directories and catalogs. It is useful for desktop publishing and archival storage.

The product includes a CD-recordable drive, Dataware Technologies, Inc.'s CD-Record software, blank media and a SCSI cable.

PlayWrite 4000 costs \$5,995.

► **Microboards**
(612) 448-9800

Product shorts

Elo TouchSystems, Inc. has announced the IntelliTouch Model P284-Mac14 TouchMonitor, a Macintosh-compatible touch-screen monitor. The product was designed for daily use in public-access kiosks and point-of-sale applications that require brightness and clarity. Cost: \$1,620. Elo TouchSystems, Fremont, Calif. (510) 651-2340. . . **RasterOps Corp.** has introduced the 20T Enhanced Multi-frequency Display, a 20-in. Trinitron color monitor. The product provides auto-synchronization for flicker-free resolutions. It was designed for graphics designers, prepress professionals and advanced users who require Trinitron-based displays as part of their color-intensive workstations. Cost: \$2,349. RasterOps, Santa Clara, Calif. (408) 562-4200.

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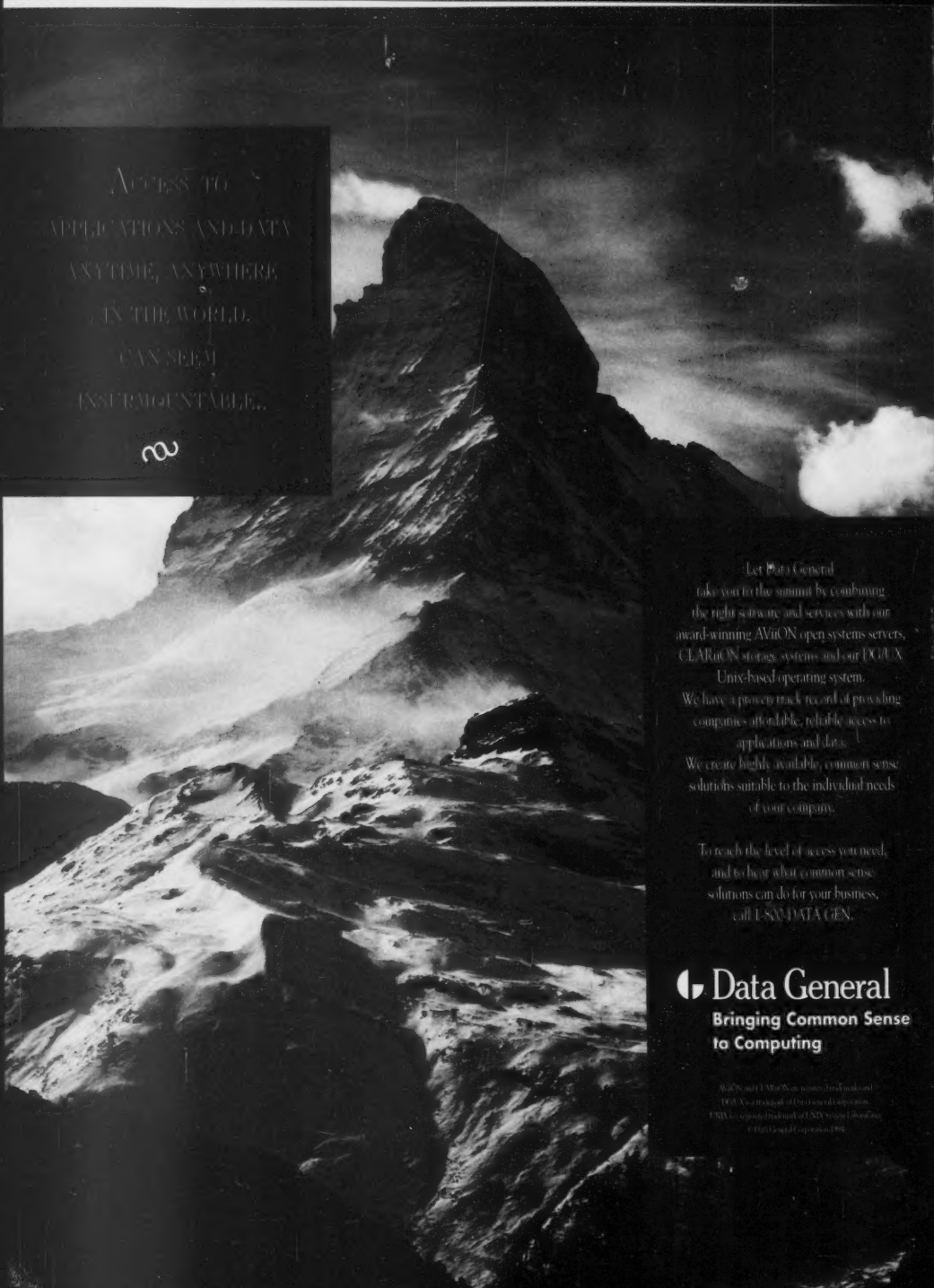
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Client/Server Application Directions

Oracle's Cooperative Initiative

September 26, 1994



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Introduction

Client/server computing is rapidly gaining acceptance worldwide, across industries and departmental functions. Despite the varying definitions, objectives for this distributed computing architecture are remarkably similar.

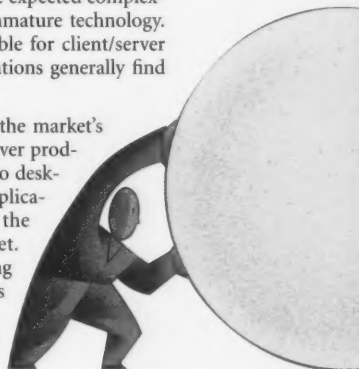
The lead objective of client/server computing is improving end-user access to data, according to studies conducted during the past three years by International Data Corporation (IDC). Early adopters are also turning to the client/server approach as a way to support business process change and to improve customer service, two essential steps toward gaining a competitive advantage and spurring corporate growth.

Regardless of the specific objective, a client/server architecture moves information and application control closer to the end user, enabling better-informed and more timely decision making. The collective result of empowering end users through information access is a more competitive company. As a result, the demand for client/server computing is widespread. So widespread that it is now planned for or implemented by more than 44% of large- and medium-size sites worldwide.

Growing client/server demand has created a vast business opportunity for application software vendors. Early client/server vendors have benefited from broad demand and limited competition in two ways. First, they succeeded in taking business away from incumbent legacy systems vendors, diminishing the market share of some traditional market leaders.

Second, early client/server adopters have been tolerant of the expected complexities and occasional shortcomings associated with this still immature technology. Recent IDC interviews with development managers responsible for client/server applications reveal that those with strong client/server motivations generally find that their implementations meet or exceed expectations.

Oracle is among the early vendors clearly benefiting from the market's shift to client/server computing. By building an early client/server product offering that spans hardware platforms from mainframes to desktops, Oracle has established one of the broadest suites of applications. Based on 1993 revenue, Oracle currently dominates the worldwide client/server-enabled accounting software market. The company is also among the top providers of manufacturing and human resources management client/server software. This white paper presents IDC's current assessment of Oracle's application strategy, highlighting the company's strengths and challenges in the application segment.

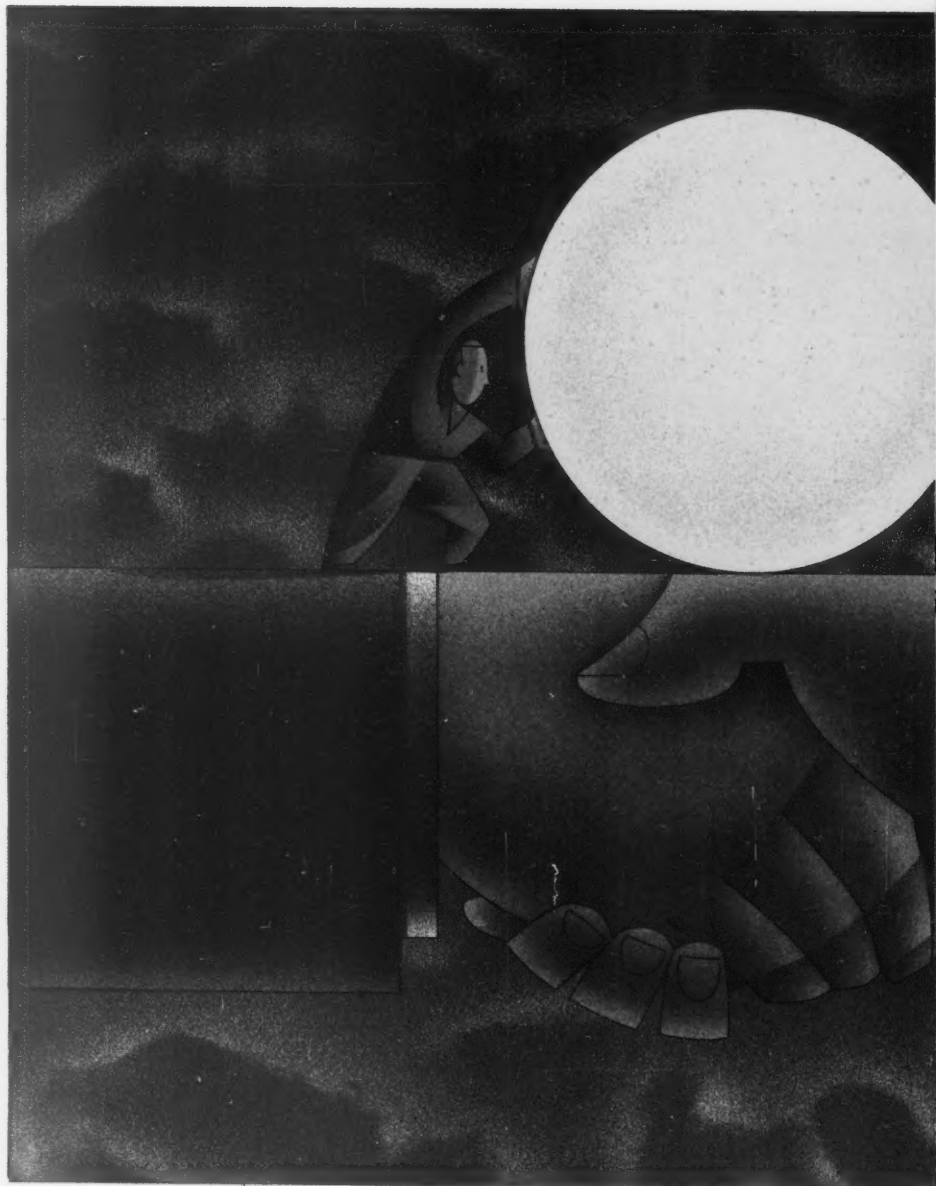


*This White Paper is written by Clare Gillan of IDC, Framingham, Mass.
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ILLUSTRATION BY MARK S. FISHER



The good part of corporate growth is increased revenues and a larger share of market. This can be managed through thoughtful diversification and expansion from domestic to worldwide markets.

One of the downsides is the lack of communication and coordination that can occur as divisions increasingly assume a more autonomous attitude. This is often exacerbated when offices and development facilities are spread around the globe.

Oracle, despite its overall success, is experiencing some growing pains. The company's database market dominance has been advantageous for its application division, which continues to leverage Oracle development technology to satisfy its worldwide database customer set. The database and tools divisions, however, have remained fairly separate from the application division, exercising their freedom to court some of the application division's biggest rivals, including SAP, Inc. and PeopleSoft, Inc.

Conflicts with database division objectives have disrupted application development schedules and caused conflicts in the sales channel. Continued nourishment of

Client/Server Application Directions

this openly competitive environment is critical for Oracle as a total company. However, more cooperation and integration between divisions is a necessity for the application division's continued success.

Despite the application division's accomplishments, its success is continually overshadowed by the company's flagship DBMS business. Oracle's growing focus on multimedia and the information highway may further detract from the unsung application division's time in the limelight. This is unfortunate, given the architectural enhancements of the Release 10 version of Oracle's application software product family, its increased international functionality and a progressive partner program that is sure to bolster Oracle's position in the application industry.

Oracle: Healthy and Growing

Oracle is now a top provider of client/server-enabled applications, with more than 1,700 customers in over 50 countries. In 1993 Oracle's application software revenue growth was 76%, more than six times higher than IDC's estimate for the overall application software market. Oracle's applications earned total

software and maintenance revenue of \$148 million (Figure 1). Accounting software generated the largest share with \$88 million, or 59.4%. Figure 2 shows Oracle's application software revenue breakdown by operating environment. Sales on the Unix platform continue to dominate all other environments, capturing 74% of Oracle's 1993 application revenue.

Expanding on its current successes, the application division recently announced a progressive partner program, Cooperative Application Initiative (CAI). Through CAI, Oracle will publish application program interfaces (APIs) for its applications, allowing third-party vendors to integrate their software with Oracle Cooperative Applications (OCAs). The company also has formed Oracle Industries, a new strategic business unit focused on vertical industries and several new products.

New Applications

Oracle currently offers a broad set of integrated modules, including

commercial and government finance applications, manufacturing, distribution and human resources management. With Release 10, Oracle supports a new, more flexible architecture and increased worldwide coverage in all its applications (Figure 3).

All listed applications will be based on Oracle's System 7 database technology. Applications that support the new Forms-4 architecture include rewritten payroll and human resources management applications and a new commission module.

Oracle is a top provider of client/server-enabled applications, with more than 1,700 customers in over 50 countries.

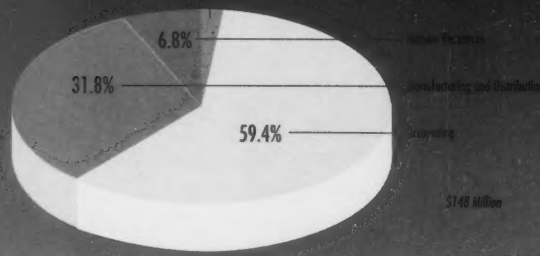
A new sales and marketing application and rewrites of the general ledger, government general ledger and planning applications are expected to be released under the new Forms-4 architecture by the end of 1994. The remaining financial, distribution and manufacturing modules will be rolled out under the Forms-4 architecture before the debut of Release 11 of the company's OCAs, which IDC expects by late 1995.

Notably, Release 10 is the first worldwide rollout for Oracle's manufacturing modules. English, French and German versions have been announced and additional languages will be released based on demand.

Manufacturing, Distribution Initiatives

Oracle introduced several new manufacturing and distribution initiatives including configurable order manufacturing and supply chain integration (SCI). Also known as assemble-to-order, configurable order manufacturing offers customers flexibility and choice during the manufacturing process. Manufacturers can be more responsive to client needs by offering unique, tailored products.

Oracle Application Software License and Maintenance Revenue Breakdown by Application, 1993
Figure 1



Client/Server Application Directions

Oracle's commitment to SCI is essential to the virtual corporation concept. The objective of SCI is optimizing inventories and deliveries while streamlining operations with suppliers, manufacturers, distributors and customers.

Oracle claims that it will support SCI by offering functionality that meets and integrates the diverse needs of all segments of the manufacturing chain, including purchasing, finance, engineering, order administration, inventory, shipping, receiving, deliveries, planning and work in process. Oracle's broad product line, database market dominance and CAI positions the company for leadership in SCI.

Pricing

With the introduction of Release 10, Oracle has implemented a user-based pricing model. There is a base price, ranging from \$10,000 to \$20,000, for each application module and accompanying five-concurrent-user license, regardless of server. Companies pay an incremental fee for each additional concurrent user at a cost ranging from \$1,000 to \$5,000 depending on system configuration. Oracle's price per user is the same across most countries with stable currencies, reinforcing the company's global application initiative. Most other application vendors cannot offer such uniformity.

Release 10: Two Phases

The first phase of Release 10 is a rewrite of all Oracle applications to run on Oracle's System 7 RDBMS. Because all announced application modules in Release 10 are based on System 7, they can take advantage of triggers and stored procedures. This should increase application performance and efficiency while simplifying the building and maintenance of business rules. In addition, Release 10 supports parallel processing, which allows resource-intensive application processes such as consol-

idation and journal postings to run on symmetric multiprocessing computers. This environment should decrease bottlenecks and processing times for larger applications.

Forms-4: Client/server at the Desktop

Phase two of the new architecture involves rewriting the applications under Oracle Forms-4. This enables a Windows desktop to operate as a client, providing application navigation and control rather than just presentation, which was all Release 9 provided. The Forms-4 architecture is a key development for Oracle; in the past, the company did not have a strong competitive solution at the desktop because of its lack of support for full navigation and processing on the client—often referred to as the "fat client." Notably, for non-Forms-4-based applications, Oracle currently offers a "business manager" that allows the applications to run on Windows, although users cannot fully exploit

the benefits of Windows.

The Forms-4-based Release 10 architecture splits the application into three segments: application processing and navigation, business rules and processing, and the data-

base. Under Forms-4, appli-

cation processing and

navigation can run on

any of the environ-

ments listed in Fig-

ure 4, as well as

on a Windows or

Windows NT

client. The only

environment that

is noticeably absent

from the list is a na-

tive implementation of

Novell NetWare. However,

Oracle does support NetWare as

a network operating environment.

Oracle reports a native implementa-

tion of NetWare is planned, al-

though the company would not

commit to a release date.

Business rules and processes are

stored with the database on the

server or on multiple servers, which

can also be any of the platforms in

Figure 2. Oracle reports its goal in

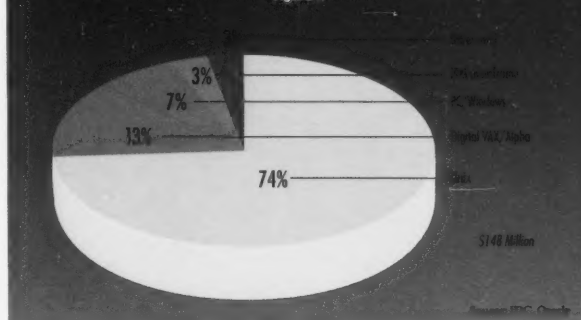
placing most of the processing and

business rules on the server is to in-

crease performance by minimizing

Oracle Application Software License and Maintenance Revenue Breakdown by Operating Environment, 1993

Figure 2



{Promises, Promises, Promises}

ORACLE COOPERATIVE APPLICATIONS WILL ENABLE YOU TO:

CLAIM NO. 1

ROBUST FUNCTIONALITY

Deploy Manufacturing and Distribution, Financials, and HR solutions to best support each department's goals throughout the organization.

CLAIM NO. 2

RAPID IMPLEMENTATION

Improve ROI with the fastest implementation of any client/server solution.

CLAIM NO. 3

APPLIED TECHNOLOGY

Have a flexible architecture that accommodates localized evolution while maintaining enterprise-wide integrity of distributed data.



Oracle's cooperative partners include: Hewlett-Packard, Sun Microsystems, Digital, IBM, Compaq Computer, Data General, Price Waterhouse, Andersen Consulting, Coopers & Lybrand, Trilogy, Datalogix, Manugistics...

{Proof}



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network traffic.

The Release 10 applications, including the sales and marketing, payroll and personnel modules, are currently available under the Forms-4 architecture. All Release 9 applications will be rolled out with the new Forms-4 architecture in Release 11.

Oracle is keeping its commitment to offer customers the choice of "any client, any server" with its announcement that support for Macintosh and Motif clients will follow Windows support.

Distributed Application Processing

Oracle expects to support fully distributed application processing across all application modules by year-end 1994. Through joint development be-

tween its database and application divisions, Oracle is building transaction and data replication capabilities—available in Oracle database Release 7.1—to achieve fully distributed applications and databases. This means organizations will be able to link and distribute databases among multiple sites worldwide. These databases can then be updated and queried as one database.

"Any Client, Any Server"

With application support for more than 30 server platforms, Oracle is already a leader in platform diversity. The company is keeping its commitment to offer customers the choice of "any client, any server" with its announcement that support for Macintosh and Motif clients for all Forms-4-based applications will follow Windows support. Again, no time commitments were given.

In the interest of preserving investments of customers who do not want to be forced to upgrade to PCs, Oracle is continuing to support

character terminals under the new architecture. In addition, the company also supports the three-tiered client/server option, in which the client housing the application logic and control is one level removed from the end-user, interacting with the user's desktop through cooperative processing. Oracle allows PC, OS/2 and terminal clients to reside in the same server environment.

Synchronized Divisions

The integration of the application and database development groups in early 1993 resulted in a more synchronized development effort. The application division used Oracle's CASE*Method to develop Release 10. Prior to Release 10, the division built its own proprietary extensions to Oracle development tools. Now, on standard Oracle technology, customers and partners have access to the same development tool set that created the applications. Furthermore, Oracle offers access to the CASE-based application models, providing users easier customization, extension and integration of the company's applications.

Release 10: International Aspects

Oracle claims its new cooperative applications have a much-improved set of international functionality, including new multisite and multi-organization capabilities, stronger support for tax-related issues, such as value added tax, improved currency management and robust, country-specific functions. With Release 10, Oracle is offering its OCAs in more than 15 languages, including French, German, Spanish and Danish. Kanji and Chinese versions of the software are expected late in 1994.

The maturity of Oracle's worldwide sales and support channel gives it a major competitive advantage. In 1993, 55% of its application revenue came from outside the U.S. However, there is still plenty of room for improvement within the established channels. Oracle's country offices are very independent, controlling their own sales, support and marketing functions. In the past, country offices had no incentive to work with each other or to integrate Oracle's applications, databases and tools. Many offices, therefore, acted in their own best interests, which was sometimes not in the best interest of the company.

Oracle instituted a goal and incentive plan to reverse this negative trend. Beginning in the second quarter of 1994, Oracle began to restructure its worldwide organization into four units. One covers the Americas and Canada; another handles Japan; a third covers Asia and the Pacific Rim; and a fourth addresses Europe, the Middle East and Africa.

The company now has more than 50 Global Business Centers (GBCs), which provide global resources across countries. These GBCs will expand their domains to include the OCAs, providing pre- and post-sales, marketing, implementation, consulting and product support, as well as any extra assistance, for all Oracle application and tool products. Notably, Oracle plans to provide most local customization in the core product.

The GBCs also serve as expertise centers, supporting countries that only have sales offices, or countries that have no local Oracle presence. Currently, Oracle has sales offices in more than 90 countries.

With Oracle's fully distributed applications and databases, users will be able to link, update and query worldwide databases as if they were one.

Cooperative Application Initiative

Oracle has developed more than 35 APIs for its applications. The company is publishing these APIs, which it calls open interfaces, so that complementary products and legacy applications can be integrated with OCAs at the data level.

For instance, Oracle's open interfaces support the import or export of transaction data, the creation of new tables and interfaces to EDI applications. Oracle is encouraging vendors to integrate with OCAs via strong, best-of-breed, complementary products. Vendors with vertical industry expertise or applications already developed in Oracle are particularly attractive to the company. In addition, Oracle is targeting vendors that have not yet moved their products to open systems or client/server computing.

For selected vendors, the company is providing development toolkits and staff to assist in the integration process. In addition, Oracle is giving select CAI partners access to its worldwide sales and support distribution channels, which provides a strong incentive for any vendor to enter the program. The complementary alliance partner is expected to present its product in Oracle sales opportunities as well as provide joint marketing and development resources.

Revenue sharing varies by partner. Figure 5 is a list of the vendors that currently have formal relationships with Oracle's application division under this new program. The list includes the application, the company, the product name, the OCA it integrates to, and the industries it targets.

Oracle Industries: Reaching Out

Although Oracle's applications have been targeted for cross-industry use, the company has had particular success in industries such as manufacturing and government. In order to expand its presence into vertical markets that it is not effectively covering today, Oracle has implemented Oracle Industries, a new strategic business unit.

Taking a CASE Approach

The Oracle Industries initiative combines Oracle's internal resources and software with the expertise of external consultants and systems integrators to pursue opportunities in specific vertical markets. Oracle has designated a development team to build general business process models and vertical application templates based on its CASE tools. The business models contain documented business processes that will be used to guide companies in re-engineering.

During consulting engagements, Oracle uses the vertical application templates to create customer solutions. The company hopes these customers will allow it to repackage the finished vertical application designs. In return, Oracle may offer customers a break on the consulting fees. As expected, Oracle has experienced some resistance from customers who value the proprietary design as a competitive advantage, although Oracle reports that many clients do not have a problem with the arrangement.

If there is ample demand for the template-generated applications, Oracle could package them as part of its OCAs. A recent example of

this is an environmental information system designed for companies involved in the manufacture, use, transport or disposal of chemicals or hazardous materials. The software automates many environmental business functions such as regulatory compliance and reporting, corrective action and waste management.

Oracle Cooperative Applications Available at Announcement of Release 10*

Figure 3

FINANCIAL

General Ledger
Accounts Receivable
Accounts Payable
Fixed Assets
Project Costing
Project Billing

MANUFACTURING AND DISTRIBUTION

MRP
Shop Floor Control
Bills of Material
Engineering
Work in Process
Purchasing
Inventory
Cost Management
Order Entry
Master Scheduling

HUMAN RESOURCES

Payroll**
Personnel**

MONITORING

Oracle Alert**

GOVERNMENT FINANCIAL

General Ledger
Accounts Receivable
Accounts Payable
Purchasing

SALES AND SERVICE

Sales & Marketing**

* All listed applications are supported by Oracle's System 7 architecture

** Supported by Oracle's Forms-4 architecture

One rabbit
can
ruin it
for
every bunny



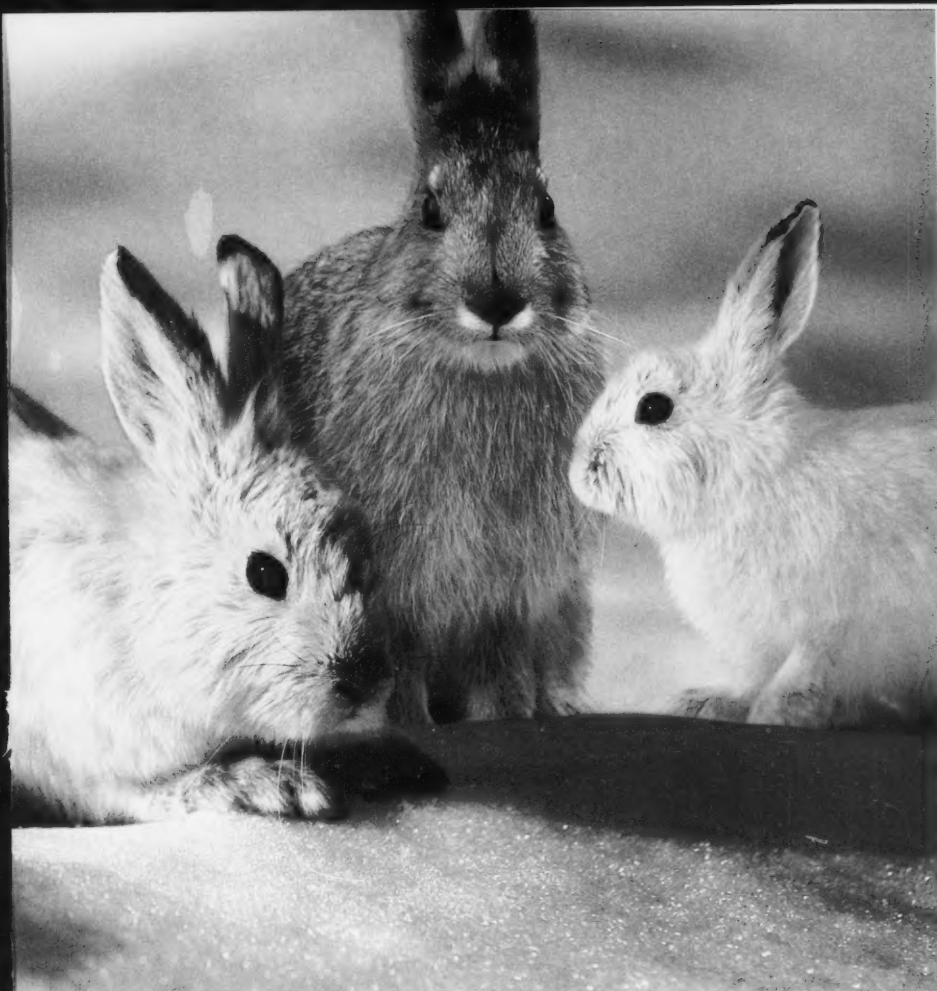
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*Implementing client/server applications
without properly adapting them
to your environment can be hazardous
to your wealth.*

Survival. In today's competitive business climate, survival requires more than selecting the right client/server applications. It demands that you choose the best team to integrate the correct business and technology solutions for your company.

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Consultants must have the in-depth industry knowledge to scrutinize your business challenges and the objectivity to



evaluate all available options. Furthermore, they must have the flexibility to select the best implementation methodology and the real-world experience to get the job done right for you.

For more than a decade, Price Waterhouse and Oracle have worked together to develop, test, refine, and implement creative, cost-effective solutions to complex business problems around the world. In fact, Oracle chose Price Waterhouse to participate in its extensive beta test program. This experience provides Price Waterhouse

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White Paper

In addition to its own vertical application activities, Oracle has marketing agreements with all the Big 6 consulting firms and will continue to leverage this channel for extended market coverage with Oracle Industries.

Historically, user organizations have found that plug-and-play applications are not as seamless as a set of fully integrated applications developed by one vendor.

Delivering on its announced plans will secure Oracle's position as a leading application provider. However, there is work to be done managing the extensive family of platforms and applications.

Having this family is a strength of

Oracle's, but developing, marketing and supporting all the different options will continue to be a challenge. Continued development of partnerships with system vendors, complementary software vendors and even other systems integrators will be important if Oracle is to supplement its own resources.

Channel conflict is one possible outcome in such a mixed environment. Currently, 30% of Oracle's revenues come from non-direct channels, and the company wants to increase this figure to 50% over the next few years. Channel conflict between the partners and resellers will arise over which channel is best positioned to take on a deal and which partner or reseller will take credit for the revenue. For instance, does an Oracle sales person in a vertical industry sales situation call on CAI partners or a reseller?

Integrating best-of-breed applications is another challenge. Historically, user organizations have found that plug-and-play applications are not as seamless as a set of fully integrated applications developed by one vendor. Oracle must make its best-of-breed strategy as seamless as possible and hope that the problems that arise will be offset by the benefits of being able to integrate among a broad portfolio of Oracle and CAI applications.

Oracle's ability to counter alternative development choices is in question. The company's application solution strategy assumes the acceptance of Oracle tools and database technology. Oracle does provide gateway and communication products that enable servers running the Oracle RDBMS to integrate with servers on other networks running other RDBMSs.

However, while it is more flexible than some other competitive solutions, this attribute may not be convincing enough for a company that has adopted another database standard internally.

Strengths

The ability of Oracle's architecture to take advantage of the intelligent desktop is a major plus. Specifically, phase two of the new architecture introduced in Release 10 enables users to exploit intelligent clients such as Windows at the desktop.

Benefits to organizations include minimized network traffic leading to faster response times, more efficient access to enterprise data, and better integration with desktop tools to analyze, package or distribute data.

The company also offers a broad set of applications and environments. In fact, Oracle has one of the broadest sets of client/server-enabled business application offerings. These include accounting, manufacturing, distribution,

Application Operating Environments Available at Announcement of Release 10 as Servers or Clients

Figure 4

Amdahl UTS	Microsoft NT* (supported as a server or client by Forms-4 applications only)
AT&T Global Information Solutions System 3000*	Microsoft Windows
AT&T 7000 R3	Motorola Delta 8000
Datapoint SVR4	OS/2
Digital AXP OSF1*	Pyramid-DC/OSx
Digital AXP Open VMS*	Pyramid OSx
Digital RISC Ultrix	SCO Unix*
Digital VAX VMS	Sequent-Dynix ptx*
DG AViON	SGI
Encore 91 Series	SNI RM600
Fujitsu DS90	Sun Microsystems 4SPARC
Groupe Bull DPX/20	Sun Microsystems Solaris*
Harris 4000	Unisys ptx*
Hewlett-Packard UX*	Unisys SVR3
IBM MVS	Unisys SVR4
IBM RS/6000AIX*	BBopen Systems
ICL DRS6000	

* Also available. Oracle claims others listed will be available by year-end 1994.

Client/Server Application Directions

human resources and sales and marketing. In addition, the company is a leader in platform support with servers and clients, spanning a wide range of operating systems and platforms, including OS/2, Unix, Windows, VMS and multiparallel processors.

Oracle is "open"-minded in its willingness to accommodate the many vendors that offer complementary applications. Although it may lose some business to competitors by publishing its APIs, the CAI will help secure Oracle's position as a leading solutions provider.

Oracle's openness is particularly attractive to vendors with limited resources. Benefits include access to the company's large and growing installed base, help from Oracle's development resources and joint marketing with Oracle's well-established sales force.

Early signs of this initiative are positive. Several vendors IDC has met with since CAI was announced are enthusiastic about the program. More than 20 have signed on officially and IDC believes this is just the beginning. Clearly, users looking toward more seamless integration among a broad choice of applications stand to benefit from this arrangement.

Oracle's large and rapidly growing DBMS installed base is a definite strength. In 1993, IDC estimates that the company captured about 44% of the \$1.4 billion worldwide Unix relational database software market. This installed base represents a great opportunity for Oracle to sell its applications.

The increasingly tighter integration between Oracle's application and development divisions is both a strength and a challenge. The bene-

fits of cooperation are evident in the Release 10 products, as well as in programs such as CAI and Oracle Industries.

Notably, the Oracle database division is developing relationships with third-party application vendors. Partners include Oracle application division competitors such as SAP, Avalon Software, Inc., and PeopleSoft.

This triangle between the Oracle application division, third-party vendors and the Oracle database and tools divisions continues to be a sensitive area, but the company seems to be managing it well. Both PeopleSoft and SAP report that Oracle is currently the number one database for their client/server applications.

Expanded cooperation makes infiltrating the Oracle RDBMS installed base easier. Furthermore, the application division will benefit from tighter integration with Oracle's worldwide sales and support organizations, which have previously been focused on the RDBMS and tools.

As a large corporation, Oracle appeals to other large, multinational entities.

In the increasingly confusing world of downsizing, re-engineering and client/server applications, large multinational corporations may feel more comfortable turning to a deep, well-established corporation for its applica-

tions and consulting requirements. Oracle is the third largest independent software vendor worldwide, with 1993 software and maintenance revenue of \$1.3 billion and total corporate revenue of \$1.8 billion. This size will invariably be a competitive advantage

against smaller, less-established competitors.

Closing Words

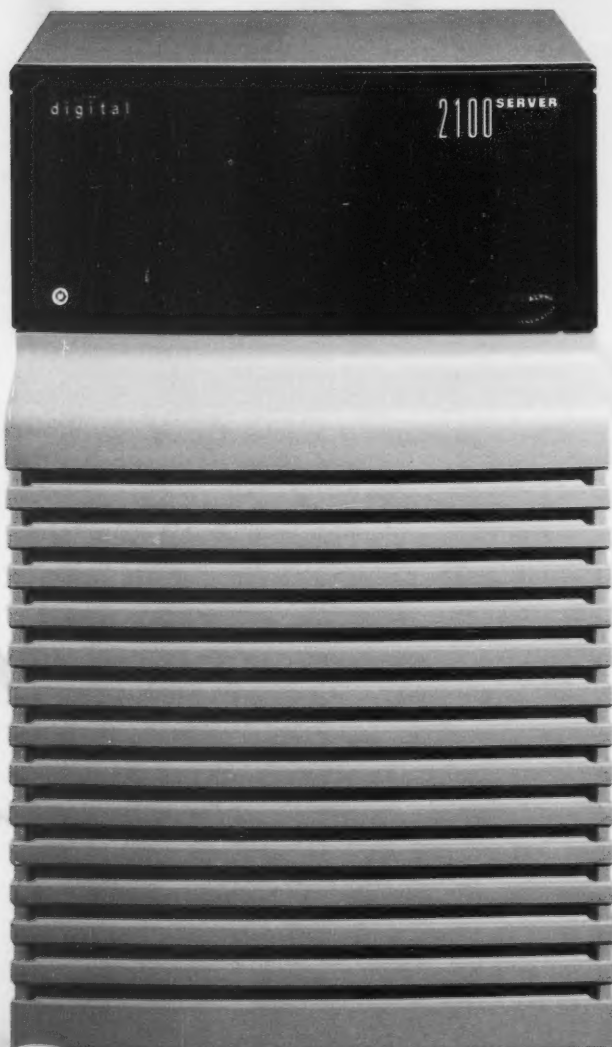
The worldwide client/server application market is churning with activity. IDC estimates that this market was \$2.4 billion in 1993 and will grow to \$12.7 billion in 1998. Competitive pressure to re-engineer business processes and improve customer service is driving client/server adoption worldwide.

All signs indicate that Oracle will continue to be a dominant provider of distributed business applications, particularly to large multinational organizations. Oracle's Forms-4 migration will provide a more competitive solution at the desktop where Oracle has traditionally been vulnerable. In the meantime, Oracle's broad product line, cross-platform support and multinational capabilities still make it a clear short-list contender for serious application investments by global organizations.

The company has already established itself as a leading provider of financial applications. Furthermore, particularly with its growing list of CAI partners, Oracle is among an elite few able to offer end-to-end supply chain integration.

At the high end of the market, Oracle's most formidable competitor is Germany-based SAP. Beyond SAP, Oracle today primarily competes with point solutions from specialty vendors. Where Oracle will have more diverse competition is further downstream in the middle

Oracle's broad product line, cross-platform support and multinational capabilities still make it a clear short-list contender for serious application investments by global organizations.



P u t t i n g T e c h n o l o g y

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The 64-Bit Server.
IBM® May Have It In '96.
HP® May Have It In '97.
SUN® May Have It In '98.
Compaq® May Have It In '99.
You Can Have It Today.

	DIGITAL 2100 Server ASURUP (1 CPU)	HP 9000 H90	SUN SPARCServer 1000 (2 CPU)	IBM RS/6000 590H
PROCESSORS	1-4	1-2	1-8	1
SPECint92	124.0 per CPU	108.8 per CPU	60.3	97.6
I/O (MB/sec)	132	32	32	80
MAX. INT. STORAGE	32 GB	10 GB	8.4 GB	12 GB
ENTRY PRICE (US \$)	\$26,900	\$78,000	\$46,700	\$66,400



The new 64-bit Digital 2100 Server is years ahead of the competition. Why? Its multi-processor Alpha AXP™ design gives it unbeatable speed and database address power. But don't take our word for it:

Andrew Allison, *Inside the Computer Industry*

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Terry Shannon, *Illuminata*

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David Irwin, Oracle Corporation

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And right now, the deal is even hotter. Oracle and Digital are offering a great deal on special configurations of the Digital 2100 Server family, either UNIX® or OpenVMS™, and any of the following products: Oracle7™ database software, Oracle Financials®, Oracle Manufacturing™ or Oracle Office™. Interested? Call Oracle at 1-800-336-8671, ext.18 (U.S. Only), Digital AXP Fast FAX Service 1-800-842-7027 (U.S. Only), or contact your local Digital or Oracle Sales Office or Authorized Resellers to get details on this PowerChannel offer. Wouldn't it be great to have Oracle on the 2100 Server on your side?

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White Paper

Oracle Cooperative Application Initiative Participants by Application

Figure 5

APPLICATION	COMPANY	PRODUCT	OCA THE PRODUCT INTEGRATES TO	TARGET INDUSTRY
Budgeting/forecasting	Pillar Corp., Foster City, CA	FY Plan	Financial	Manufacturing services
Process manufacturing	Datalogix International, Valhalla, NY	GEMMS	Financial	Chemical, food/beverage, pharmaceutical
Imaging	170 Systems Inc., Cambridge, MA	MarkView	Financial, manufacturing	Cross-industry
DRP/logistics	Manugistics Inc., Rockville, MD	Manugistics	Manufacturing	Chemical, consumer products, pharmaceutical
	Industri-Matematik (IMI), Valhalla, NY	System ESS	Financial, manufacturing	Distribution/wholesale, retail, manufacturing
Electronic commerce	EDI Solutions Inc., Bloomington, MN	EDImap	Manufacturing	Cross-industry
	American International Facsimile Products (AIFP), Beaverton, OR	Host-Fax	Financial, manufacturing, HR	Financial services, manufacturing, health care, transportation
	Sterling Software, Dublin, OH	GENTRAN-Basic	Financial, manufacturing	Manufacturing, retail, transportation, government
Product data management	Sherpa Corp., San Jose, CA	Sherpa/PIMS	Manufacturing	Discrete manufacturing
Workflow management	Recognition International Inc., Sunnyvale, CA	Plexus FloWare Software	Financial, manufacturing	Financial services, manufacturing, health care, government, retail, oil/gas, telecom
	170 Systems Inc., Cambridge, MA	MarkView, SQL*Flow	Financial, manufacturing	Cross-industry
Order configuration	Trilogy Development Group, Austin, TX	SalesBUILDER	Manufacturing	Manufacturing, distribution
Project management	Mantix Inc., Reston, VA	CASCADE	Financial	Aerospace, government contractors, utilities
	Lucas Management, Irvine, CA	Artemis I/CSQS	Financial	Engineering/construction
Software translation	Sterling (ABC), Dublin, OH	GENTRAN	Financial	Cross-industry
Tax calculation & preparation	AVP, Salem, MA	AVP Taxware	Financial	Cross-industry
In-house receivables collection	Get Paid, Montville, NJ	Get Paid	Financial	Cross-industry
IBM 3270 Unix connectivity	Holtek, Long Beach, NY	Holkey	Financial, manufacturing, HR	Cross-industry
Service management	Matrix Waukesha, WI	OpenUPTIME	Financial	Engineering/construction
Association management	Orange Systems, Gaithersburg, MD	Association Management Systems	Financial	Cross-industry Association

Client/Server Application Directions

market where its multinational support capabilities are less of a competitive advantage.

In 1993 the application division's revenue only accounted for 11% of Oracle's software revenue compared with 89% from database and tools sales. Nonetheless, when measuring all applications sold worldwide from word processors to manufacturing systems, Oracle has achieved a notable position as a top 20 application software provider.

Oracle's application division has put a solid application strategy in place and has begun emerging from under the database division's shadow. The budding cooperation between the divisions will result in improved quality across the Oracle product line. Meanwhile, Ora-

Oracle is the third-largest software vendor worldwide, with 1993 software and maintenance revenue of \$1.3 billion and total corporate revenue of \$1.8 billion.

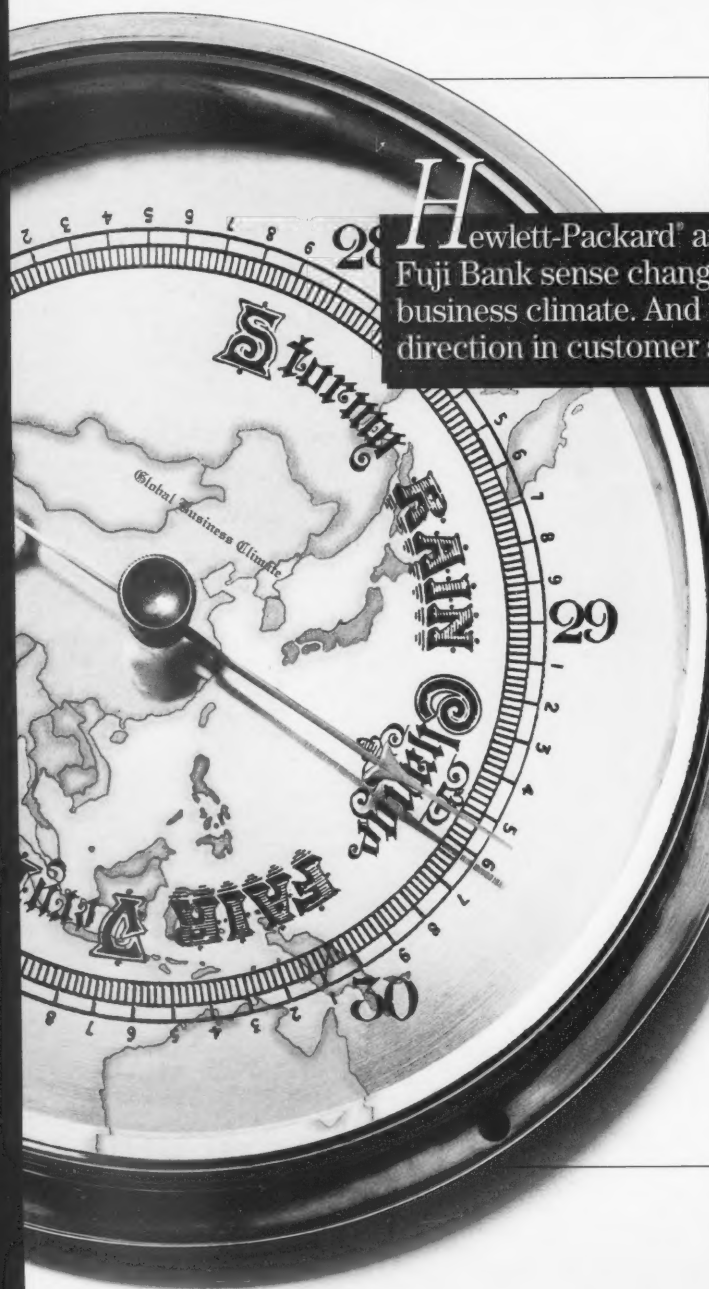
cle's CAI strategy will secure the company an account control position at a growing number of sites by empowering companies with a robust selection of integrated applications and an industrial strength tool set for added customization. ■

continued

Oracle Cooperative Application Initiative Participants by Application

Figure 5

APPLICATION	COMPANY	PRODUCT	OCA THE PRODUCT INTEGRATES TO	TARGET INDUSTRY
Customer service	Aurum Software Inc., Santa Clara, CA	Customer Resource Planning (CRP) System	Financial, manufacturing	Electronics
	Clarify Inc., San Jose, CA	ClearSupport	Financial, manufacturing	Systems/software
Maintenance management	HSB Reliability Technologies, Minneapolis, MN	Maintenance Control System (MCSII)	Financial, manufacturing	Manufacturing, oil/gas, power generation, telecom, government, pharmaceutical
	The System Works Inc., Marietta, GA	Maintenance Planning and Control (MPAC-SQL)	Financial, manufacturing	Oil/gas, power generation, petro chemical, food/beverage, mining, education
Data collection	Intermec Corp., Everett, WA	Data Collection Systems	Manufacturing	Manufacturing, distribution, government, services
Ad-hoc query and reporting	Business Objects Inc., Cupertino, CA	BusinessObjects	Financial, manufacturing, HR	Cross-industry
Finite scheduling	i2 Technologies, Dallas, TX	Rhythm	Manufacturing	Manufacturing
	Red Pepper, San Mateo, CA	Operations planning & scheduling system	Manufacturing	Manufacturing
Capital assets creation & maintenance	PSDI, Cambridge, MA	MAXIMO	Financial, manufacturing	Manufacturing, oil/gas, power generation, telecom, government, pharmaceutical
Production management	Price Waterhouse, Dallas, TX	PREMAS	Financial	Oil & gas
Release accounting	Radley, Southfield, MI	CARAS	Manufacturing	EDI/automotive
Tax compliance	Verity, Berwyn, PA	SalesTax	Financial, HR	Cross
	Verity, Berwyn, PA	GeoCoder	Financial, HR	Cross



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RISC chips

Sun to add UltraSPARC to chip market melee

By Jean S. Bozman
SUNNYVALE, CALIF.

■ After falling behind the pace of RISC chip performance for several years, Sun Microsystems, Inc. recently said it is readying a high-end 64-bit UltraSPARC chip that will put its workstations and servers back in the race next year.

UltraSPARC will be up to five times as fast as Sun's 32-bit SuperSPARC chips, company executives said. The next-generation chips are being manufactured by Texas Instruments, Inc., with volume shipments expected in SPARC systems by mid-1995.

"We want users to know when SPARC is going to get back in the lead," said Dave Ditzel, chief scientist at Sun's SPARC technology business here.

At the same time, industry analysts said Sun is preparing two enhanced SuperSPARC microprocessors that will boost the 32-bit chip line past the 50- and 60-MHz speeds now found in Sun systems.

Sun's chief performance problem has been microprocessor speed. "If you look at SuperSPARC, it's not only slower than

the RISC chips, it's slower than Pentium, at least on integer performance," said Linley Gwennap, editor of "Microprocessor Report," a Sebastopol, Calif., newsletter.

Sun compensated for the slowness of its SPARC chips by employing symmetrical multiprocessing, even in desktop models. The strategy appears to have worked because Sun still ships more units than its workstation rivals, said Laura Segervall, manager of workstation research at International

Data Corp. in Mountain View, Calif. Yet users complained as Sun fell behind in performance against RISC workstation competitors Hewlett-Packard Co. and IBM.

Sun's chief performance problem has been microprocessor speed.

Up and coming

Key features of the UltraSPARC chip include on-board multimedia support (including support for two video data streams) and SPECint 92 benchmarks ranging from 200 to 400. But some analysts said Sun has yet to show UltraSPARC samples to outsiders. "This is pushing the envelope a bit because they haven't seen silicon yet," said Andrew Allison, editor of the newsletter, "Inside the New Computer Industry" in Carmel, Calif.

Bull, IBM develop similar servers

But Bull beats Big Blue with its Escala line of Unix SMP machines

By Jean S. Bozman

Bull Worldwide Information Systems' announcement last week of a Unix server based on PowerPC chips shed light on IBM's delayed SMP servers, which are built on the identical hardware design, industry analysts said. The IBM servers are expected to be introduced at Unix Expo in New York next week.

Bull's line of symmetrical multiprocessing (SMP) servers, called Escala, debuted in London last week. Initially sporting up to four PowerPC 601 RISC chips, the line will run relational database engines from Oracle Corp., Sybase, Inc. and Informix Software, Inc.

Joining the competition

IBM is expected to announce its version of the system to complement its high-end uniprocessor RS/6000 servers [CW, Sept. 12]. "This means that IBM is finally in the hunt to be competitive with Hewlett-Packard and Sun for high-end database server environments," said Paul McGuckin, a Unix analyst at Gartner Group, Inc.'s Santa Clara, Calif., office.

"But the scalability potential will not be fully realized until the second half of 1995."

J. M. Huber Corp., a Fortune 500 energy and

electronics firm in Edison, N.J., with 15 RS/6000s worldwide, plans to use IBM's SMP Unix servers. "We have some impending installations, and I think these will be helpful to us,"

said John Shiels, vice president of information systems.

Shiels said he is looking to the SMP RS/6000s to deliver better response times and reliability for distributed Unix servers running the Oracle relational database. The firm outsourced its IBM 3090 mainframe and expects to have fully migrated to the Unix RS/6000 systems by October 1995.



In the Bull pen

Bull's Escala line of Unix SMP servers includes the following:

Minutower: One to four 75-MHz PowerPC 601 chips; 32M to 64M bytes of memory.

Desktop: Two to four 75-MHz PowerPC 601 chips; 256M bytes of memory.

Price range: \$25,000 to \$90,000

Availability: December

AIX update

Marty Strakhovsky, product marketing manager at Bull's Unix Systems group in Billerica, Mass., said IBM will soon improve the SMP systems' ability to smoothly scale up in power. He expects a maintenance release of IBM's AIX 4.1 Unix operating system will achieve that by year's end.

AIX 4.1 was announced in July, but IBM recommended that it be used mostly by developers for porting purposes, analysts said [CW, Aug. 8]. The enhanced AIX 4.1 code should arrive by the time Bull

units ship in December, Strakhovsky said.

The SMP Unix server, which had been code-

Bull, IBM, page 72

Wireless wanna-bes left wanting

Network managers struggle with connectivity, address allocation

By Steve Moore

End users going on the road for their companies want their laptop computers and personal digital assistants (PDA) to give them convenient access to all the files, databases and applications they are accustomed to using at the home office.

They also want to put an end to cumbersome plug-in cords and go wireless, and they do not want to hear about how difficult it is to allocate network addresses to mobile computer users.

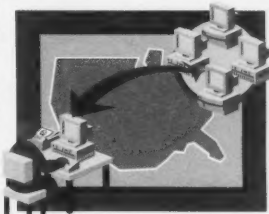
Network managers are casting about for efficient ways to deal with these issues. Vendors such as Cellsys, Inc. in Los Angeles promise they will soon support economical "ubiquitous wireless connectivity" for nomadic computer users, but network managers have their doubts.

"I'd love to have my users take their laptops and get on-line without plugging them in," said Virgil Pittman, senior vice president of systems at Fireman's Fund Insurance Co. in Novato, Calif. But so far, Pittman said,

"there's nothing out there that can provide the sophisticated functionality we need today and eliminate the need for us to pull all this wire and fiber." At this point, "I haven't even seen anyone effectively link a keyboard to a computer without a wire," he said.

"There are a lot of people working on the problem of mobile and wireless registration of laptops and PDAs," said Bennett Kobb, a consul-

tant at New Signals Research in Arlington, Va. Nevertheless, Kobb warned, as new personal communications services offerings become available over the next few years, there will be an enormous legal brouhaha when competing wireless service providers fight over



frequency allocation and interference problems.

Even if they follow Pittman's example and use traditional plug-in products while they wait for the wireless market to settle down, network managers must also find ways to allocate scarce TCP/IP network addresses to mobile users.

"If you're used to dialing into different ports on your TCP/IP network from different cities, each one tends to be a totally different subnet with a different IP address," said Dave Passmore, a principal consultant at Decisis, Inc. in Herndon, Va.

Dial-in dilemmas

Unfortunately, as Lockheed Corp. knows only too well, it is inefficient and therefore expensive to reserve numerous IP addresses on a company's nationwide network. While Lockheed initially set aside 50 IP addresses for dial-in users, "eventually we will need 200, which is a whole subnet just to service dial-up IP," said Jesse Jones, a LAN project leader at the Sunnyvale, Calif., company.

"In the AppleTalk remote-access world, we use a Cayman GatorBox to allocate addresses dynamically," Jones said. But in the IP world, the company still must reserve a large group of IP addresses for fixed assign-

Wireless, page 72

Ending 'fax ping-pong'

HP offers simultaneous voice, data access

By Michael Fitzgerald

How would you like to call someone, say you are going to send an electronic document and then discuss and jointly amend it during the same conversation?

Hewlett-Packard Co.'s new OmniShare data conferencing product allows users to do just that.

OmniShare uses digital signal processor technology built into AT&T Paradyne's VoiceSpan product to give users simultaneous voice and data access over a single telephone line. HP expects this to save users significantly in fax and overnight charges. "What we're trying to do here is end fax ping-pong," said Jim Hammonds, OmniShare product manager.

OmniShare combines a 14.4K bit/sec. modem with a pen-capable, 9-in. monochrome screen for viewing and changing documents. An HP-developed Interactive Document Conferencing application lets the users communicate.

It has drawn interest from users for its clever design and potential for improving business communications.

Fred Zickert, manager of microcomputer support at Eaton Corp. in Cleveland, was briefed on OmniShare. He said the ability to do simultaneous voice and faxing was "extremely interesting."

OmniShare targets noncomputer users. Though the device is based on a Cy-

rix Corp. 33-MHz 486SX chip and comes with Microsoft Corp.'s Windows 3.1 with pen extensions, it is not designed to work as a standard PC. For instance, it does not have a keyboard port.

One beta tester is Richard Wang, an account manager in the San Francisco office of Saatchi & Saatchi Advertising. Wang said OmniShare was easy to learn.

"I think it's a great product. It's interactive, and it allows us to work more closely with our clients. Things are done while you're talking on the phone vs. faxing things and waiting a couple of hours," Wang said.

One information systems manager at a large Northeastern pharmaceutical company, who asked not to be named, said OmniShare needs to be less proprietary before it will be of interest.

"It's nice as a good point-to-point solution, but it isn't part of anything bigger. They need to line up other vendors to gain support, like Intel has," the user said.

At \$2,595, the first generation of this product is not cheap. It was designed to be easily upgradable. It has built-in infrared communications for exchanging data with other devices and space for both a LAN connector and a Type III PCMCIA hard drive, neither of which is supported in the product's first version.

HP officials said they do not expect OmniShare to be a huge volume seller, but they said it gives the company a starting point for building the technology into its mainstream product line.

Market researcher Forward Concepts in Tempe, Ariz., predicts data conferencing will grow from a \$20 million market this year to a \$1 billion market by 1997.

This MOMA isn't the Museum of Modern Art

Message-oriented Middleware Association seeks to foster educational, standards efforts

By Elisabeth Horwitt

Message-oriented middleware is moving, slowly but surely, from a fragmented, proprietary industry to one with the kind of cross-vendor cooperation that could eventually result in the standardized interoperability users demand.

The mover is the Message-oriented Middleware Association (MOMA), a consortium of middleware vendors that first met last summer and officially formed earlier this month. MOMA seeks to educate the market on the promise of message-oriented middleware as a distributed application development environment. Such products ensure reliable communications between applications through a queuing system where messages sit until the receiving system and its network are ready.

A second, less clearly defined goal of the consortium is to move to standards to ensure interoperability and migration of applications across different types of middleware.

"Standards are a delicate issue with MOMA because the only commonality [between members' products] is that we all use message-passing," said Peter Tait, director product planning at PeerLogic, Inc. in San Francisco, a founding member of MOMA.

Forum for the future

On the other hand, MOMA is likely to become a forum for discussing future support of existing standards, such as the Open Software Foundation's (OSF) Distributed Computing Environment (DCE), Tait said. The OSF has already expressed an interest in adding messaging to DCE, which currently supports only remote procedure call middleware.

In addition, MOMA has just formed a committee to "look at the interoperability question to see if it is a direction worth pursuing and feasible," Tait said. "It is very preliminary."

The need for such interoperability is paramount for users who need to mix middleware products.

Some integration is occurring one-on-one. For example, IBM and PeerLogic recently announced plans to integrate their respective middleware products.

And Momentum Software Corp. in Needham, Mass., and Horizon Technology, now merged as Momentum, are coming up with a similar product, company spokesmen said.

Still lacking is an industry-wide effort to come up with a standardized application programming interface (API) that would ensure not only application interoperability but migration across different vendors' platforms.

Interoperable users

Shared Medical Systems in Malvern, Pa., is one organization that expects to need the interoperability provided by such an

API. The company uses Covia Technologies' Communications Integrator but expects it will need to hook up with insurance or medical service providers that use other middleware systems, said Don Bechtel, a systems developer for the organization.

"What's needed is only a small set of standard APIs that accomplish the simple yet essential task of connecting applications to the services they use," said the Network Application Consortium, a group of major corporate users, in a recently published interoperability position paper. "The industry must evolve to the point where all vendors use the same API sets."

However, while MOMA members indicate a willingness to consider an API standard, they are far from agreement. IBM, for example, is pushing its Message Queue Interface (MQI), which it is proposing to the X/Open Co. But, not all members agree MQI is the optimal API, said Hub Vandervoort, Momentum president.

MOMA recently added five new members: Applied Communications, Inc. in Omaha; Early, Cloud & Co. in Middletown, R.I.; Isis Distributed Systems, Inc. in Marlboro, Mass.; Software AG in Germany; and Suite Software in Anaheim, Calif.



Mixed environment

In a middleware survey of 373 IS sites, **46%** of respondents said they had **no intention** of using message-oriented middleware...

... **26%** said they were using the technology now. Of those, **54%** said they use it to link users to **multivendor** hosts and servers, and **31%** said they use it to make their server available to **business partners** such as suppliers and customers.

Source: Computerworld Database Division, Framingham, Mass.

MOMA now has 11 members. Founding members are IBM, Covia Technologies, Digital Equipment Corp., Momentum Software Corp., Apertus/Systems Strategies, Inc. and PeerLogic, Inc.

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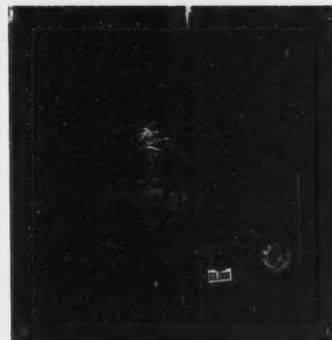
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Wireless

CONTINUED FROM PAGE 69

ment to remote users, he said.

Instead of having fixed IP addresses, Passmore noted, mobile users could be assigned temporary IP addresses from a pool of addresses owned by the particular server they dial into. "But that assumes the software is designed so the mobile device can take on a dynamic IP address, and most IP software doesn't do that," he said.

Jones said he has not yet found the right combination of hardware and software to support dynamic IP address allocation.

Mounting difficulties

Mobile computer users may also throw a monkey wrench into network managers' plans to use the Desktop Management Interface (DMI) standard to support remote configuration and monitoring of mobile computers as well as static desktop computers.

"DMI could be a help there, but that assumes that the management staff at the central site has a chance to go out and poll the mobile devices," Passmore said. "And what are the odds that the system is polling at the time that someone dials in?"

Theoretically, a network management system could be designed so it automatically polls every remote device for both network information and DMI information each time the remote device dials in, but Passmore said he does not know of any system with that capability.

"Managing remote computers is tough to do because they're hard to keep track of, and LAN administrators typically are not on top of all these issues," Passmore said.

Briefs

IBM scientist earns award

John Cocke, a retired IBM computer scientist who pioneered the development of RISC architecture and optimizing compiler technology, was recently awarded the National Medal of Science.

Rmon probes see gains

Companies that use remote network monitoring (Rmon) probes can manage more LAN segments per technical staff member than those that do not, according to new research from McConnell Consulting, Inc. in Boulder, Colo. The productivity gain from Rmon usage increases from 34% when 11 to 50 LAN segments are managed to 139% when 200 or more segments are managed. The McConnell study projects 185% growth in installed Rmon probes within the next two years.

Bull, IBM

CONTINUED FROM PAGE 69

named Pegasus during its two-year joint development by Bull and IBM, was repeatedly delayed by technical problems, industry analysts said. Strakhovsky said the SMP bottlenecks were addressed by adding direct-access memory for each processor and high-speed 64-bit IBM Mi-

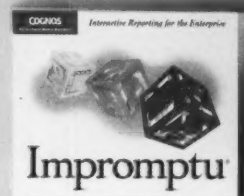
cro Channel Architecture buses for I/O functions.

Power packages

Bull will sell Escala systems through its direct sales force in Europe and through value-added resellers in North America. There will be three major packages: a minitower with one to four 75-MHz PowerPC 601 chips, a deskside server with two to four 601 chips and a rack-mounted system. Prices will range from

\$25,000 to \$90,000.

Industry analysts said they believe IBM will offer an upgrade to the PowerPC 604 when the chip ships in the first half of 1995 and to the PowerPC 620 in late 1995. The 620 chips will be more powerful than the IBM Power2 chips used in the biggest RS/6000 servers, they said. Some analysts predicted that IBM and Bull would add support for up to eight processors in the Unix SMP servers sometime next year.



Workgroup Computing

Headquarters Software, Inc.

Headquarters Software, Inc. has announced FaxHQ, fax server software for workgroups.

According to the Pleasant Hill, Calif., company, FaxHQ lets network users send, receive and manage faxes from a desktop PC while sharing modems built into the central fax server.

The product automatically schedules nonpriority faxes to transmit during the least expensive time of day. It also provides a world information database with a world clock for destination time reference, a map and up-to-date city and country codes.

Features include management tools to track faxes for projects, status logs, shared and private phone books, data and time stamping and remote fax capability.

FaxHQ costs \$1,295.

► **Headquarters Software**
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Mirimar Systems, Inc. has announced Personal MacLAN Connect 4.0, Macintosh-to-PC connectivity software for Windows.

According to the Santa Barbara, Calif., company, Personal MacLAN Connect 4.0 provides bidirectional print sharing between Windows PCs and Macintoshes,

new systems management utilities and a 32-bit Apple Computer, Inc. AppleTalk protocol stack.

Windows users can send print jobs to the AppleTalk printers as if they were locally connected, and the product routes the jobs to the appropriate printer regardless of its location on the network.

Prices range from \$199 to \$1,999, depending on the number of users.

► **Mirimar Systems**
(805) 966-2432

Elan Computer Group, Inc. has announced Elan License Manager 3.0, licensing software for Unix.

According to the Mountain View, Calif., company, Elan License Manager 3.0 includes soft limit license usage, the ability to set flexible start-date licensing keys, a dynamic client debugging capability and the ability to meter software usage.

The metering feature subtracts a license count after every use of a certain application or function of that application, so vendors can sell functionality of products without selling the entire product.

Other enhancements include a reporting tool that displays peak usage during a time period and automatic loading of new keys that the user requests.

Elan License Manager 3.0 costs \$7,500.

► **Elan Computer Group**
(415) 964-2200

Platinum Technology, Inc. has announced Data Navigator, software that automates the migration of complete sets of DB2 data.

According to the Oakbrook Terrace, Ill., company, Data Navigator lets users migrate DB2 data intact, maintaining the referential integrity (RI) of the DB2 tables. The product can also be used to define and test system or user-defined RI rules and generate referentially complete test data.

Other features include data sampling techniques for finessing data and strategies that allow users to save, revise and reuse data migrations.

Prices start at \$20,873.

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Enterprise Networking

Cisco help won't take AnyLAN everywhere

By Stephen P. Klett Jr.

In a move seen by analysts as a major boost for a technology that has been widely criticized, Cisco Systems, Inc. and Hewlett-Packard Co. last week announced they would team up to develop 100VG-AnyLAN products. The two companies will also integrate their respective hub and router management software.

The companies will codevelop 100VG-AnyLAN interfaces for Cisco 7000 and 4500 series routers. The interfaces should ship by the middle of next year. Cisco joins Wellfleet Communications, Inc. in formally supporting 100VG-AnyLAN, HP's 100M bit/sec. data transport protocol that competes with the 100Base-T protocol from the Fast Ethernet Alliance.

Vendor cachet

"From HP's perspective, this is the most important VG announcement in some time," said Rebecca Thompson, an analyst at Dataquest, Inc. in San Jose, Calif. "To date, it's just been HP, AT&T and a handful of vendors behind the VG proposal. Cisco's name lends credibility to their story, but there's still a tough road ahead."

For example, in addition to fierce competition from the Fast Ethernet Alliance, 100VG-AnyLAN is starting to feel the heat from falling prices for Asynchronous Transfer Mode (ATM) products,

particularly recent 25M bit/sec. ATM announcements from IBM and First Virtual Corp.

Plus, the existence of two distinct 100M bit/sec. Ethernet proposals is keeping many potential adopters on the fence.

"We would like to upgrade our network, and 100M bit/sec. Ethernet appears to be the easiest route to take," said a network manager at a Midwest pharmaceutical firm, who asked not to be named. "However, now you have two paths diverging into unknown woods, so we'll wait a while before we decide."

Fear of failure

According to a recent Dataquest survey of 300 user companies, this is a widespread fear among network managers. They worry that if they commit to one 100M bit/sec. technology and the other takes off, product development for their choice will halt.

This fear will likely slow adoption of either technology until a clear winner emerges or each gains enough of a presence to guarantee future support, the report said.

While Cisco's support helps, and 100VG-AnyLAN is considered a superior technology to fast Ethernet, its long-term prospects are dim, according to Dataquest. The research firm said fast Ethernet, which has more than 40 vendors supporting it, will eventually emerge as the overall winner simply because of the strength-in-numbers cliché. "There's

no doubt VG is a great technology, but so was the Betamax," Thompson said.

Talks with several hub and switching vendors at the recent Networld/Interop '94 in Atlanta revealed little interest in 100VG-AnyLAN support. For example, one source close to Cabletron Systems, Inc. said the hub maker plans to support fast Ethernet once a viable market emerges, but it has no plans for 100VG-AnyLAN.

Start-up Xylan Corp. voiced a similar stance. "We have no 100VG-AnyLAN plans because we haven't found a single user that wants it," said Douglas Hill, director of marketing at Xylan in Calabasas, Calif.

Both Xylan and Amber Wave Systems, Inc. are looking at adding fast Ethernet server connections to their switching hubs next year.

Starting over

Because it does not use Ethernet's traditional data transmission protocol—called Carrier Sense Multiple Access with Collision Detection, or CSMA/CD—100VG-AnyLAN has been criticized for allegedly requiring users to totally relearn Ethernet to implement it. HP says this is not true.

"Users can plug VG in today without requiring any changes to existing applications," said Brice Clark, strategic planning manager at HP's Roseville Networks Division in Roseville, Calif. "People have been saying you need to totally recompile applications, which is simply not true. VG is as simple as 10Base-T" Ethernet, he said.

At least one early user agreed.

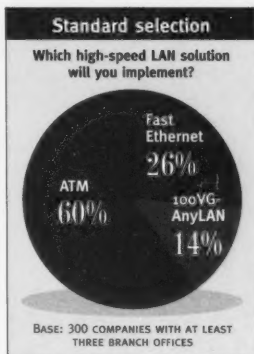
The University of California at San Diego has been using a 100VG-AnyLAN hub for three weeks to connect an eight-user workgroup and has already seen a significant performance boost over Ethernet. And installation was a breeze, said Kevin Walsh, network specialist at the university.

"I really can take a 100VG hub and network interface card, plug it into an existing PC and take the exact same wire and plug into the VG hub, and boom—I've increased my real-life throughput by six times," Walsh said. The university plans to extend 100VG-AnyLAN technology to multiple workgroups based on its three-week experience with the technology, he added.

The university is not swayed by the falling ATM prices.

"The transition from 10Base-T to VG is painless compared to ATM, which is a lot more complicated and requires more investment," Walsh said. "Plus, if you have a 100M and a 25M bit/sec. technology at roughly the same [hardware] cost, I'll take the 100."

In addition to the router interfaces, Cisco and HP will develop a common internetworking software architecture to ensure interoperability between their respective hub and router lines. A version of Cisco's low-end 2500 series remote office router will be available next year as an add-in module for HP's AdvanceStack line of stackable hubs.



Cards on the table

Users can expect to see

Extended Industry Standard Architecture (EISA) and ISA versions of 100VG-AnyLAN adapter cards from HP by year's end priced at \$449 and \$349, respectively.

Peripheral Component Interconnect cards will follow in February. HP has shipped 400 100VG-AnyLAN hubs to end users to date, according to the company.

Lotus sends Notes 'lite' to defend groupware crown

By Lynda Radoosevich

Lotus Development Corp.'s recent introduction of Notes Express is meant to help stem the tide of groupware competition coming from several quarters and increase the Notes installed base, observers said.

Specifically, the \$60 "lite" version of Notes is Lotus' response to a price challenge by a budding, lower-cost groupware market comprising offerings from Collabra Software, Inc., Trax Software, Inc. and others.

Notes Express is a subset of Notes that includes Notes electronic mail, group discussion databases, news feeds, reference information databases and shared phone books. Other attributes include the following:

- A \$60 to \$99 per user price.
- Third-party developer access to data in Notes Express

applications via the Notes application programming interface.

- The ability to "switch on" full Notes capabilities for an additional \$250.

Avery Dennison & Co. is a CC-Mail site that considered Notes for its group conferencing and corporate information repository capabilities. But instead it turned to Collabra, which offers a lower price (see chart).

"We looked at Notes, and it was too expensive and too hard to administer," said Siewching Lee, operations analyst at Avery Dennison's manufacturing and engineering division in Pasadena, Calif.

Even though Notes Express addresses the issue of software cost, it is doubtful Avery would have chosen it

The cost of groupware

LOW-COST GROUP DISCUSSION SOFTWARE FROM COLLABRA, TRAX AND OTHERS HELPED SPUR LOTUS TO OFFER NOTES EXPRESS

PRODUCT	PRICE	FEATURES
Notes	\$495 per user (\$330 street price)	E-mail, group collaboration applications, application development, proprietary client/server communication services
Notes Express	\$60 per user (full Notes upgrade—\$250)	E-mail and communication services, four specific applications, proprietary client/server services
Collabra's Share	\$70 per user	Group discussion forums, uses existing E-mail services
Trax's TeamTalk	\$80 per user	Group discussion forums, uses existing E-mail services

because Notes has a complex client/server back end that is different from CC-Mail's and requires a full-time programmer, Lee said. Collabra uses CC-Mail back-end services, she added.

Notes, page 77



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Pictures tell the story to Atlanta doctors

Video paramedic-to-hospital setup enables better field triage

By Michael Fitzgerald
ATLANTA

The big sign over Interstate 75 in downtown Atlanta recently trumpeted: "704 days to the Olympics!" But it's a lot closer than that to blastoff for Emory University's Health Communications Project, a sweeping, multi-hospital effort to change how hospitals communicate that may affect how injured people are treated at the Olympic games.

One of Emory's key initiatives revolves around an AT&T Corp. product called Picasso.

Picasso is a point-to-point video system that combines standard technologies such as television, T1 telephone lines and Joint Picture Experts Group, or JPEG, software to let doctors examine patients remotely through the transfer of still images.

Willing to travel

Emory has taken the technology one step further by making Picasso portable — it has built a camera and a Gateway 2000, Inc. Hand-book subnotebook running a database into an oversize briefcase. Included are three kinds of power hookups: a battery, a plug that fits into a car cigarette lighter and regular AC wall power.

What makes Picasso truly mobile, however, is a choice of transmission type: It can hook into a

regular phone jack or, with the flip of two switches, it becomes a cellular phone. This lets Picasso transfer images from the field.

The still version costs \$5,000 to \$5,500 to install; the mobile Piccas-

sso potential because it can be taken anywhere, meaning doctors would not need to take patients to a specific room at a specific site. He added that 85% of patients transported to a hospital by paramedics do not actually need to go to the hospital, at least not right away. These would include folks with sprains, muscle pulls and other ailments that can initially be treated with aspirin and rest. Paramedics consulting with doctors via Picasso could become more efficient and save significant amounts of money, Holbrook said.

The still version of Picasso has been approved by the Food and Drug Administration, but the mobile version is still under review.

Emory's portable Picasso trial produced at least one sit-



Project administrator Jeffrey Dunbar says that in a sense, the mobile Picasso takes doctors back into patients' homes

so paints its pictures for \$11,000.

"From an electronic sense, this can take the doctor back into the patient's home," said Jeffrey M. Dunbar, administrator of the Health Communications Project, which includes the six institutions affiliated with Emory and four other Atlanta-area hospitals.

Dr. Stephen Holbrook, an assistant professor at Emory's emergency medicine division, agreed. "Paramedics with Picasso become people who do house calls," he said.

Holbrook said the mobile version of Picasso has a great deal of

ON SITE

**Emory University
Health
Communications
Project**
Atlanta

Challenge: Improve paramedic efficiency and get more immediate diagnoses during crises.

Technology: Picasso, a point-to-point video system, sends images between sites. It was adapted for field use.

Result: Early testing has been solid, allowing quick consultations between doctors and paramedics for patients outside hospitals. Project still awaits FDA approval.

uation where the technology expedited medical care, Holbrook said. A man was hit in the eye with a rock, and the image the paramedics broadcast to an emergency room doctor showed the man had a globe rupture, a serious eye injury that requires immediate treatment.

The hospital's ophthalmologist, on his way out for the night, was told there was a globe rupture in the field. "He didn't believe it until he saw the photo," Holbrook said. Instead of going home, he prepared to operate.

Olympian effort

If the FDA approves the mobile Picasso, Emory expects to use it at the 1996 Summer Olympics to do on-the-spot diagnoses for attendees. This should reduce pressure on the limited number of ambulances available. Emory is also piloting Picasso with a mountain rescue team and a SWAT squad.

"This system gives you that immediate consultation so you can more effectively use your resources to decide who you send to the hospital and who you wait for," Holbrook said.

Cellular medicine

Picasso is only one of several projects under way at Emory to enhance medical communications. The hospital's Health Communications Project recently started a pilot that gave cellular phones to some 50 doctors, nurses and technicians to carry while they walk the wards.

The purpose of the trial is to see whether the phones help the medics save time by not having to run back to their desks or scrounge for a phone when they get impor-

tant pages. Instead, they can just dial the phone and keep walking, according to Jeffrey M. Dunbar, administrator of the Health Communications Project.

If the trial is successful, Emory will play off the "Star Wars" Strategic Defense Initiative strategy by installing microcells on its campus to create, in effect, a campuswide cellular private branch exchange.

If that goes well, Emory will look to deploy Cellular Digital Packet Data in six to nine months so doctors, nurses and the like can download data to their clipboards for quick review.

—Michael Fitzgerald

Future Notes

While Notes is the numero uno groupware product for now, Lotus will have to further change its pricing structure for it to grow beyond its installed base of 900,000, users and analysts said.

To do so, industry experts predicted that by late 1995, when Lotus is expected to deliver Notes Version 4/Lotus Communications Server, it will shift the Notes pricing as follows:

- The price of the full Notes client (now \$495) will drop to around \$200.
- Notes Express will sell for \$30 to \$40 per client.
- Lotus will introduce a Notes runtime cli-

ent with limited application development capabilities for about \$160.

- The Notes server, which now costs \$495 and supports a couple of hundred users, will cost \$5,000 to \$10,000 and support 1,000 users.
- Notes professional developer's tools will cost roughly \$3,000.

Lotus would not comment on the pricing predictions. However, company officials indicated their long-term communications strategy includes integrating CC:Mail, Notes and SoftSwitch into a three-tiered platform.

Those tiers make up a robust messaging backbone based on CC:Mail and SoftSwitch EMX, a client/server applications server based on Notes, and multiple client options based on the same Notes/CC:Mail interface code. —Lynda Radosevich

Notes

CONTINUED FROM PAGE 75

The price for the package is nominal compared with other costs, said Darin Stoddard, manager of information systems at Flow International Corp., a manufacturer of water-jet cutting and cleaning equipment in Kent, Wash. "With Notes, software costs are pretty much nil compared to the training and ongoing administration costs," he said. Notes is expensive to administer because, unlike Collabra, it does not use network and E-mail file structures, he added.

With Express, Lotus is also attempting to preempt Microsoft

Corp., which promises groupware capabilities at E-mail prices with its Exchange (formerly EMS) server and free Windows 95 messaging client. Exchange was originally scheduled to arrive late last year but now is not expected until well into next year. Full Notes has a list price of \$495 and with bulk discounts typically costs \$330 per user.

Lotus is also trying to lure Microsoft and Novell, Inc. customers to Notes before those companies hit with strong groupware offerings. Notes Express costs \$99, but Microsoft's Mail, Novell's GroupWise (formerly WordPerfect Office) and CC:Mail users can get it for \$60 per user through an incentive program that has no scheduled termination date.

Browsers, 'phone booths' on the Internet

A semiregular column with items of interest and amusement from the Internet.

Browser, browser—who's got the browser? With newfound zeal, the leading makers of computer operating systems are moving *en masse* to include Internet browsers in their next-generation sys-

tems. Watch for IBM, Microsoft and Novell to issue Mosaic-like browsers in the coming weeks and months. All will give users a pleasing, graphical front end on the 'net. They will compete with Mosaic and non-Mosaic-based browsers already available for sale from several sources as well as with the public domain version of Mosaic, which is free for the taking

from servers at the National Center for Supercomputing Applications.

At this point, the most detail is known about IBM's plans for its next release of OS/2 dubbed Warp. The first release of Warp, expected next



month, will include Internet access utilities. A World-Wide Web browser for Warp called WebExplorer is expected several weeks later.

MCI joined the list of Internet advocates two weeks ago when it announced Windows-based communications software for its public data service, NetworkMCI Business. The software will be upgraded with Internet access capabilities by year's end, according to MCI.

With all this activity, how about a trade show on the Internet? Not about the Internet, mind you. *On* the Internet. Ziff Communications Co. will hold its first "virtual" show next March, using new software (dubbed Virtual Places) from Ubique Ltd. in Rehovot, Israel. Ubique's product includes multimedia and collaborative computing features. The two firms announced the plan for N+I Online at the Networld/Interop show in Atlanta earlier this month. Virtual Places requires a special server to be installed in parallel with an Internet server. For more information, write to Ariel Sella at ariel@ubique.com.

Also offering special-purpose software and a server is Mosaic Communications Corp. in Mountain View, Calif., which announced its Mosaic NetScape network navigator and NetSite server line at Networld/Interop. The two products, said to improve performance over standard Hyper-Text Transmission Protocol-based clients and servers, are aimed at providing secure, electronic commerce across the 'net. For more information, contact the company at <http://mosaic.mcom.com>.

Everyone knows the 'net will be important, but will you want to tap in from a storefront on Main Street? Online Zone in San Francisco bets you will and has announced a sort of Internet "pay phone booth" containing rented terminals linked to the 'net. The booths will be sold to local entrepreneurs. Contact Online Zone at faludi@faludi.com.

Far from Main Street is Vietnam, where many U.S. companies are setting up shop. To get a handle on business climate and cultural issues there, try the Vietnam Forum, an E-mail discussion group (in English) run by the Washington-based Vietnamese American Education Foundation. Send the message "subscribe vnforum" to majordomo@sai-gon.com.

Finally, looking for a cheap way to train Internet newcomers? Try the Newbie Newz electronic newsletter. For information, send the message "info Newbie Newz" to NewbieNewz-request@IO.com.

Please keep us posted with your views, news and questions about items published in this space. Contact us electronically at ellis@cw.com.

—Ellis Booker, Gary H. Anthes and Mitch Betts



IMPLEMENT A WIRELESS DATA SYSTEM WITHOUT ARDIS, AND PROBLEMS WILL SURFACE ALMOST IMMEDIATELY.

Worry lines

form when connections between your computer and your wireless network fail.

Frown lines

appear as the hardware you've chosen for field workers proves difficult to use.



Bill Jones, MIS, age 38

Hair loss

occurs as users complain the system is costing them time, not saving it.

Bags under eyes

take shape from long hours spent attempting to connect your wireless network and LAN.

New technology is never easy to implement. Period. And we don't intend to convince you that a wireless data system is any different. That's why you need ARDIS. > ARDIS has implemented more wireless data systems than anyone. We offer proven end-to-end solutions that include hardware, software, airtime, maintenance and training. > We handle everything — connectivity issues, software compatibility questions, even training difficulties. You're not forced to organize and work with multiple vendors, so your system gets installed on budget, in less time and with no glitches. > When you choose a wireless data network, go with ARDIS. And look wise beyond your years, not worn beyond them. For worry-free wireless data implementation, call 1-800-662-5328 ext. 200.

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DIGITAL

Update

SEPTEMBER 1994

HIGHLIGHTS

In this issue, get the latest on special offers and product and service news along with details on Digital business solutions that are right for you

Digital's Celebris Series

Check out Digital's new line of desktop PCs

StorageWorks RAID Software

Our RAID technology provides you with higher performance, low-cost data protection, and easier management

ALL-IN-1 V3.1 Office Server

Now, ALL-IN-1 is available on the Alpha AXP platform

Take Advantage of Special Offers

Free TeamLinks Mail Client, up to 75% off ALL-IN-1 software, and more

Digital on the Internet

Details on how we're meeting your critical business requirements online

Look to LeaseWorks

Flexible financing options from Digital Financial Services

POLYCENTER Products

Evaluate POLYCENTER products for up to 60 days without cost or obligation



Check Out the New PC on the Block

Reach a Higher Level of Performance and Ease with Digital's New Line of Celebris Desktop PCs

Now more than ever, your company and your MIS administrator face enormous challenges — not the least of which is providing a PC platform that will satisfy the increasingly complex computer requirements of your users. This platform needs to be easily customized, easily deployed, and easily maintained on a worldwide basis. What's more, configurations with standardized options are a necessity.

Where do you turn for help? Digital, naturally. Our new line of Celebris desktop PCs will provide superior system performance today plus industry-standard upgradability that your users will want in the future. The best news is that this line of desktop PCs — available in five different configurations to suit your business needs — can be integrated into your existing environment at significant cost savings.

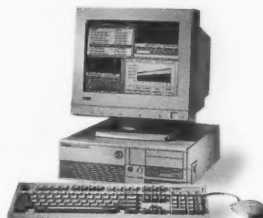
Meeting the Needs of Advanced Business Users

The Celebris PC features a comprehensive range of Intel microprocessors and the latest technology such as enhanced IDE, plug-and-play capabilities, 64-bit graphics acceleration, U.S. EPA EnergyStar compliance — all at a starting price of

under \$2,000. Along with this technology, a revolutionary design for easy chassis access, friendly start-up screens, and even new packaging make your Celebris systems a breeze to unpack, set up, configure, install, and upgrade.

And there's more. An industry-standard PCI local bus

supports multiple peripheral devices. As a highly integrated local bus architecture, PCI is optimized to take advantage of today's high-performance microprocessors. Unlike other local buses, which may be configured only for speeding up graphics, our PCI local bus is a total system solution. It provides increased performance for network adapters, hard disk drives, full-motion video, graphics, and a wide range of other high-speed peripherals that are available today.



With Celebris, you also get peace of mind. This desktop PC is designed to be durable — delivering a high level of reliability and compatibility — because it is engineered according to Digital's rigid standards. Plus, it is backed by our 3-year warranty and our recognized worldwide service excellence. The result? The Celebris will be on your desktop much longer than many other PCs on the market today.

For more information or to order a Digital Celebris PC, call

1-800-722-9332

digital

StorageWorks RAID Software Boosts Performance, Availability

Your company's data storage requirements are hardly one-dimensional. For mission-critical applications, you need constant data availability. For data that must be online but is not heavily accessed, you want reliability as well as affordability. And for applications such as high-speed data acquisition, you require the highest I/O performance possible. Is there a product that can deliver all three? The answer is yes. Digital's StorageWorks RAID Software for OpenVMS meets your full range of data availability and performance needs.

StorageWorks RAID Software adds the benefits of sophisticated RAID technology to your system or cluster right

now — without the purchase of any additional hardware. It's also an ideal way to improve I/O performance. Plus, it's an option for protecting your data against disk failures at substantially lower cost than volume shadowing.

Digital's StorageWorks RAID Software lightens the storage management load in three ways.

Higher Performance

StorageWorks RAID Software boosts performance on OpenVMS VAX and OpenVMS AXP clusters using RAID Level 0, also known as disk striping.

Striping balances an I/O workload across sets of as many as eight disks, improving request processing capacity and data transfer rates. The perfor-

mance benefit is especially apparent on Alpha AXP systems, since their I/O subsystems are hard-pressed to match the CPU speed. (For even higher I/O performance, combine the RAID Level 0 capability of StorageWorks RAID Software with OpenVMS Volume Shadowing.)

I/O workloads that are read-intensive (65 percent or more reads) often show improved performance on RAID Level 5 arrays as well.

Low-Cost Data Protection

StorageWorks RAID Software also includes RAID Level 5 functionality — also known as striping with parity — for OpenVMS VAX systems and VAX-based OpenVMS clusters. RAID Level 5 uses the capacity equivalent of one disk to safeguard data stored on sets of up to eight disks, giving you an economical way to protect your data from potential disk failure.

This implementation of RAID Level 5 offers robust features such as hot-swap of failed array member disks, protection against hard disk errors, and protection against undetectable data corruption due to "write holes" (system failures during array updates).

Easier Management

StorageWorks RAID Software makes your life easier by allowing you to partition arrays into conveniently manageable amounts of storage capacity. You can subdivide each array into as many as 16 virtual disks of any capacity.

This software also allows you to designate disks as preformatted "spares" through automatic spare substitution and reconstruction. If a spare is available when a disk in an array fails, StorageWorks RAID Software will automatically substitute it for the failed disk and then reconstruct data and parity onto it — restoring the array to protected status without human intervention.

In addition, if a disk fails and is replaced by another at a different hardware address, StorageWorks RAID Software's self-identifying arrays feature automatically binds the most current set of member disks into the array each time the cluster boots.

Your Investment Is Protected

No matter which level of RAID you need, StorageWorks RAID Software for OpenVMS protects your current storage investment by extending RAID capability to disks that would not otherwise be RAID-capable, such as older disks, directly attached SCSI disks, disks attached via HSD05 DSSI array controllers, and arrays consisting of more than one type of disk. This is great news for your budget and your bottom line.

For information on StorageWorks RAID Software for OpenVMS,

CALL 1-800 DIGITAL
(1-800-344-4825) and reference J11.

CHOOSE THE LICENSE THAT'S RIGHT FOR YOU

StorageWorks RAID Software licenses can be purchased for CPUs or for disks. A CPU license gives you the right to create and use any number of RAID Level 0 or RAID Level 5 arrays or partitions from a single VAX or AXP CPU. A disk license conveys the right to a single disk in an array or partition, and to use the array or partition from anywhere in a single VMScuster system.

If you have many CPUs or large CPUs in your VMScuster system, or if you have only a few disks to place in arrays, you will get the most benefit from a disk license. If you want to put many disks into arrays, the CPU license will most likely be more cost-effective. The universal product identifiers (UPIs) for StorageWorks RAID Software are:

- OMG for per-disk licenses
- OMH for VAX CPU licenses
- 2YF for AXP CPU licenses
- 2YG for media kits

ALL-IN-1 Goes a Generation Beyond

Now Available on the Alpha AXP Platform

It's no secret that Digital's ALL-IN-1 product is in a class by itself. The fact is that no comparable product can manage mail from small LAN-based groups to tens of thousands of users worldwide on such a broad range of supported desktops. And with total reliability and security.

That's the good news. And it gets even better. Today, Digital is shipping the ALL-IN-1 V3.1 Office Server on the Alpha AXP platform. That means your business can benefit from the price/performance advantages of Digital AXP systems for your ALL-IN-1 community. Just what are these advantages? Consider the following:

This new version of ALL-IN-1 continues to support large user populations in mission-critical situations on VAX systems. Your users have come to rely on the dependability and security of OpenVMS. At the same time, ALL-IN-1 helps you reduce the cost of these applications by now offering them on the industry's fastest processor family. The Alpha AXP platform enables customers to support five or six times the number of ALL-IN-1 users for a fraction of the cost per user.

What's more, you can distribute your ALL-IN-1 workgroup solutions to smaller Alpha AXP systems, thereby reducing the ongoing maintenance costs on both your hardware and software. In addition to reducing the cost of ownership, ALL-IN-1 V3.1 provides:

- Support for mixed VAX and AXP clusters
- Increased integration of PC, Macintosh, and VT clients
- New system management utilities for PCs and PC users
- Higher throughput mail server supporting the CCITT X.400 P2 standard

Find Out How Seamless Client/Server Integration Can Be

ALL-IN-1 V3.1 offers you the choice of supporting existing VT terminal users, Microsoft Windows PCs, and Macintosh clients through TeamLinks, Digital's leadership family of enterprise groupware applications.

Featuring the ability to integrate with popular desktop software products, TeamLinks enables you to use your personal productivity applications of choice. It also provides a seamless connection to the ALL-IN-1 V3.1 Office Server. TeamLinks provides you with access to the same office file cabinet whether on the PC, Macintosh, or the ALL-IN-1 server. And, since TeamLinks Mail uses the same mail server as a VT user, mail is fully interoperable across platforms.

digital

SPECIAL OFFERS

Act Now and Save

The following special offers from Digital are for a limited time only. So, act now.

- Move to WordPerfect V5.1, one of the most popular and powerful word processors integrated with ALL-IN-1, and get a FREE upgrade for OpenVMS AXP or VAX.
- Take advantage of a special introductory price for Calendar Manager by Russell Information Sciences. Save 30 percent on the purchase price if you order on or before December 31, 1994.
- Interested in FREE software? Call Digital today for a free TeamLinks Mail Client for your Windows or Macintosh computer.
- Purchase a system upgrade and receive up to 75 percent off the cost of ALL-IN-1 software.

For information on these special limited-time offers or on ALL-IN-1 V3.1 running on the Alpha AXP platform,

CALL 1-800 DIGITAL
(1-800-344-4825) and reference J11.

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Nowadays, technological innovations are introduced so quickly that what was yesterday's big breakthrough is already today's old news. In the face of such rapid technological leaps and bounds, what company wouldn't be interested in getting its hands on some effective financing tools? What value would your company place on tools that provide unparalleled investment protection, and more flexible acquisition and financing strategies? How valuable are tools that could also lower overall costs?

Such financial tools do exist. And Digital has them. Digital Financial Services presents LeaseWorks, a suite of flexible financing programs designed to provide you with unprecedented investment protection through a series of complementary financial products including TPOptions, AlphaBridge Option, Equity Upgrade Option, and SLG Upgrade Option. As dynamic as the industry it serves, LeaseWorks is the most flexible, scalable series of technology financing offerings available today. And as computing needs, environments, and financial challenges increase over time, so too will the LeaseWorks portfolio. LeaseWorks gives you:

- Flexibility to refresh technology as computing needs change or as new technologies evolve
- Investment protection through equipment credits
- A streamlined process to add additional capacity or downsize with ease
- Technology exit strategies when you're ready to change technology platforms
- A well-defined, optional migration path to the Alpha AXP platform

LeaseWorks allows you to choose the financing options you need today, and change or add options as your business and your computing needs evolve.

For more information, call the LeaseWorks hotline at

1-800-343-3451

Digital Revs Up the Internet

We're Enhancing Customer Service via the Information Highway

As commercial use of the Internet has increased, Digital has been a leader in finding creative ways to use this technology to meet your business requirements. From product information and electronic newsletters to direct ordering, we make it easy for you to do business with Digital online.

And we're continually expanding our offerings. Today, Alpha AXP systems are available for remote access over the Internet. In this first-in-the-industry program, you can log on for free and see how your applications would run in this new environment.

So, how do you connect to it all? Read on for details.

Online Product Information

When we say that our online product information is comprehensive, we mean it. You have access to Digital's *Customer Update*, information sheets, technical overviews, performance summaries, brochures, software product descriptions, white papers, the *Systems and Options Catalog*, and back issues of the *Digital Technical Journal*. And all of it is accessible using FTP or any World Wide Web browser.

FTP Access

Follow these steps to access Digital's product information as well as an archive of public domain software files:

- `ftp ftp.digital.com`
- `login anonymous`
- `cd/pub/Digital/info`

Be Part of the World Wide Web

The World Wide Web is a distributed information access service based on the hypertext model of information representation. In the hypertext model, information is represented as a collection of documents — consisting of conventional text and graphics augmented by links to other documents — that can be distributed across the Internet.

For details on how to obtain a World Wide Web browser, FTP the following file: `ftp.digital.com: README.www`

If you already have a World Wide Web browser, access this server by using URL: `http://www.digital.com/home.html`

Electronic Newsletters Keep You Up-to-Date

DECnews for Education and Research — an electronic newsletter distributed over the Internet and BITNET — offers timely news of products and programs designed for education and science, and points you to supporting documents posted in a public archive on `ftp.digital.com`. You can subscribe through LISTSERV software managed by the State University of New York.

To subscribe, send a mail message to: `listserv@ubvm.bitnet` or `listserv@ubvm.cc.buffalo.edu`

The message should be SUB DECNEWS Firstname Lastname. The command is the text of your message; the subject is ignored by LISTSERV.

Digital for UNIX — an online newsletter spanning the breadth of Digital's UNIX offerings — is distributed over the Internet every four weeks. In addition to base operating system information on DEC OSF/1, ULTRIX, and SCO UNIX, articles cover related areas such as layered products, hardware platforms, third-party applications, education courses, and other service offerings.

For subscription information, send a request to: `unix-news@pa.dec.com` with a subject line of "help."



Your Link to Newsgroups

You can join more than 99,000 readers of Digital's main newsgroup: `comp.sys.dec`. Other newsgroups such as `comp.unix.osf.osf1`, `comp.unix.ultrix`, and `comp.os.vms` deal with specific operating systems. Digital's User Society (DECUS) runs 35 more newsgroups.

In addition, `biz.digital.announce` and `biz.digital.articles` are our newsgroups for posting business information on products, services, significant contracts, organizational announcements, cooperative marketing agreements, alliances, promotions, and more.

AlphaGeneration Systems Online

Digital provides Internet access to AlphaGeneration systems so that you can easily evaluate the Alpha AXP architecture and test the functionality of the supporting operating systems, compilers, tools, and utilities.

To test drive a DEC OSF/1 AXP system, telnet or login to: `axposf.pa.dec.com`

To evaluate an OpenVMS AXP system, telnet or login to: `axpvms.pa.dec.com`

For either system, the user name is `axpguest`. No password is needed. Users are asked to answer a qualifying questionnaire and to comply with rules for machine usage.

Call Up Customer Update

Digital's *Customer Update* provides technical information about new Digital products, services, and strategies, plus details on third-party agreements. It is available online biweekly. Access this online publication by FTP (`ftp.digital.com: /pub/Digital/info/Customer-Update`), as a newsgroup (`biz.digital.articles`), or on the World Wide Web server (URL `http://www.digital.com/info/Customer-Update/home.html`).

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You can take advantage of the Electronic Connection to obtain a quote, place a hardware or software order, or track your order status. Simply telnet to: `order.sales.digital.com` for a free, no-obligation, trial run and registration. Current hours of operation are 6:00 a.m. to midnight EST (U.S.).

For a recap of Digital product and service information on the Internet, send an electronic mail message to `info@digital.com`

ALPHATM
GENERATION

POLYCENTER NetWorker Save and Restore Is Now Better Than Ever

POLYCENTER NetWorker Save and Restore (NSR) V3.0 provides major new features to better manage your data and react quickly to growth in network data. Here's how.

Your system administrators might want to separate "full" level backups from "incrementals." Or, they may need to separate "user" data on the desktop from "system" data on file servers. NSR V3.0 helps them do both through a powerful new media pools feature.

As data continues to grow, system administrators can react quickly by simply adding additional jukebox support to their existing NSR server. By combining the features of media pools and multiple jukebox support, you can more easily manage centralized unattended backup and recovery.

For more information on Digital's
POLYCENTER NetWorker Save and
Restore product, call

1-800-332-7923
and reference ext. 3333.

Discover the Benefits of POLYCENTER Products — On Us

UNIX system, storage, and network management is easy, flexible, and cost-effective with Digital's full-function POLYCENTER software products. But don't take our word for it. Find out for yourself. Take advantage of Digital's Software Loan Program to use and evaluate POLYCENTER products for up to 60 days without cost or obligation.

Managing information can be a very tough business. Especially when your business is rapidly evolving to a network-based, multivendor, distributed client/server environment. How do you keep your users satisfied, reduce costs, and save your sanity — all at the same time?

Digital is ready to help. Our portfolio of POLYCENTER solutions is an integrated, open approach to managing distributed enterprise systems and networks. In other words, these products will hand you more control, security, responsiveness, and accountability. In turn, you can focus your attention on more critical issues — like growing your business and enhancing your bottom line.

Product Preview

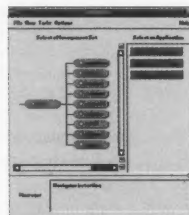
Want a closer look at some of our most popular POLYCENTER products? Here we'll highlight four solutions that will serve to make your life easier — and your business more productive.



POLYCENTER Manager on NetView

POLYCENTER Manager on NetView enables you to get cost-effective, easy network management of multivendor SNMP devices on your TCP/IP

enterprise networks. In addition, you're able to utilize the best third-party applications from the POLYCENTER NetView Association.



POLYCENTER FullSail

Now, you can easily manage user and file systems and monitor performance with the integrated components of POLYCENTER FullSail. This product enables you to spend less time on day-to-day tasks, and more time proactively managing your computing environment to identify

and head off potential problems or service disruptions.

POLYCENTER NetWorker Save and Restore (NSR)

If you want to save time and money on backup and recovery activities, turn to POLYCENTER NSR. For UNIX and PC client systems, this product enables you to back up files across a TCP/IP network in one easy operation. There's no need for local operator involvement. What's more, POLYCENTER NSR lets you share tape drives and other network resources.



POLYCENTER Console Manager

Imagine managing up to 200 systems or devices — anywhere in the world — from a single host platform. POLYCENTER Console Manager enables you to perform routine system

management tasks as though you were on a local console. You can then move your staff away from mundane tasks and redeploy them to provide better service to your users. You can also set up shell scripts to take corrective action on receipt of certain messages.

Evaluate any of these POLYCENTER products at no charge for up to 60 days by calling Digital and answering a few qualifying questions.

CALL 1-800 DIGITAL
(1-800-344-4825) and reference JEE.

**Take advantage of Digital's Software
Loan Program to use and evaluate
POLYCENTER products for up to
60 days without cost or obligation.**

Reporter's

Notebook

• With networks, who needs silly little phones anyway? Amidst all manner of networking glitz at **Network/Interop '94** earlier this month, some communication with the outside world broke down because of faulty wireless security. To be more precise, somebody made off with the cellular phones. While no one was looking, the phones in a series of meeting rooms at the Georgia World Congress Center vanished, leaving vendors scrambling to find replacements.

• While **SynOptic's** and **Wellfleet's** joint presentation was billed as a "non-event" by many in attendance, Andy Ludwick and Paul Severino — SynOptic's and Wellfleet's respective presidents — did provide some vague details on some of the initial products users can expect from the merged company, now called **Bay Networks, Inc.** First out the door will be a sub-\$3,000 combination router/hub device for remote offices. It will be similar to the "hub-lette," based on its 2500 remote office router, that Cisco announced at the show. Also in the works is a high-end ATM backbone switch with integrated multiprotocol routing functions, similar to LightStream's 2020 switch [CW, Sept. 19].

• Meanwhile, users on the floor were not happy about **SynOptic's** "fast" Ethernet chip woes. These have resulted in at least a three-month delay in the delivery of its 28000 switch, which can handle both 10M and 100M bit/sec. Ethernet traffic. "The delay throws a major wrench into our network upgrade plans, and we may be forced to look to other vendors," said a network manager at a university in the Midwest, who requested anonymity.

• **Compaq and Cisco** will enter into a collaborative manufacturing/developing partnership for routers/hubs, according to several sources at the show. Compaq and Cisco will jointly develop communication products that will eventually be used in high-end Compaq ProLiant boxes. Cisco unveiled a router-on-a-card, based on its 2500 series router, for use in PCs. The sources said Compaq would be the first PC vendor to integrate the card in its boxes. Jointly developed products are expected to hit the streets before

year's end. Compaq and Cisco declined to comment.

• Yet another vendor jumped onto the Ethernet switching bandwagon. **Onet Data Communication Technologies** unveiled a family of stand-alone and modular Ethernet switches that start at roughly \$1,000 per port. The switches are based on a proprietary architecture called "metaswitching." The scheme uses a high-speed, cell-based backplane and large shared memory capacity to de-

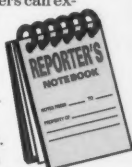
liver 10M bit/sec. of bandwidth per port.

• Expect to see a bevy of SNA and Token Ring connectivity modules from **Cabletron** in early October for its MMC lines of intelligent hubs, according to sources close to the company.

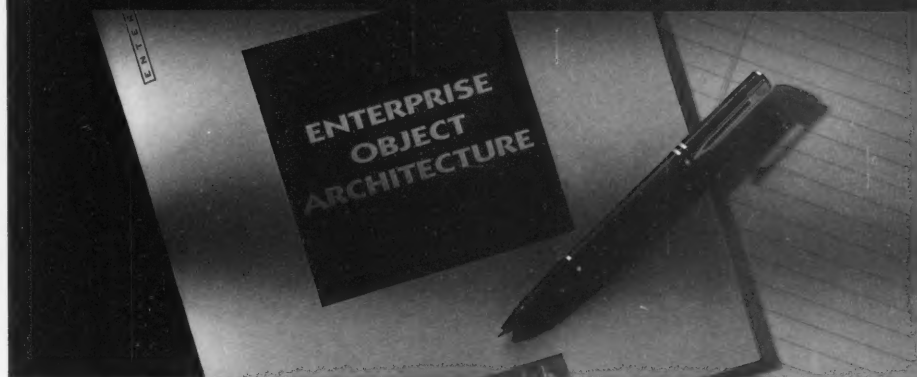
• **Hewlett-Packard** showed the first of a family of interface cards to link HP 9000s to ATM networks. The HP 9000 Series 700 adapter supports the ATM Forum's OC3 standard for 155M bit/sec. data transmission over unshielded twisted-pair Cate-

gory 5 copper wire. The card will ship in November for \$1,995.

• The **Desktop Management Task Force** announced that **Apple** has joined its steering committee. Other task force members include Digital, HP, IBM, Intel, Microsoft, Novell and SunSoft. The goal is to build broad support for the Desktop Management Interface standard aimed at supporting consistent management of all desktop hardware and software systems. — *Stephen P. Klett Jr.*



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SOFTWARE 2000 DELIVERS
OBJECT APPLICATIONS, 88

Manufacturing looks toward client/server

Software market picks up steam with new versions

By Rosemary Cafasso

When it comes to client/server migrations, most of the attention has focused on the financial or human resources folks.

But manufacturers are about to get their turn.

Although SAP America, Inc., Avalon Software, Inc. and others have been steadily selling into this niche, the market has yet to explode, unlike some other client/server segments. Recently, several manufacturing software companies rolled out new client/server versions of their applications. While some users still appear cautious about a client/server move, they said they are ready to review these new options.

"We are looking at moving toward client/server, but it will have to happen on a bit of a controlled basis," said Don Green, a project manager of applications at Vickers, Inc., a manufacturer of power and motion-control devices in Maumee, Ohio.

The September announcements included a first step for Cincom Systems, Inc., which plans to roll out a full-blown client/server version of its Control:Manufacturing software. The package will work with Oracle Corp.'s database management system instead of Cincom's own Supra relational DBMS. Cincom officials attributed the move to market realities and Oracle's dominance in the client/server field.

Branching out

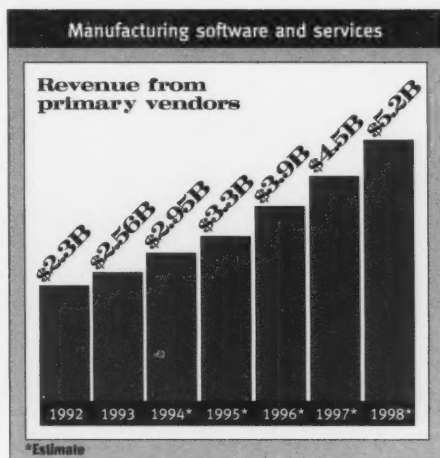
Another launch came from Avalon, which introduced an upgraded version of its CIIM software for Sybase, Inc.'s DBMS. It includes new shop floor control and capacity planning modules.

For its part, Ross Systems, Inc. said it would expand its Renaissance software beyond Digital Equipment Corp. and Hewlett-Packard Co. platforms and begin shipping an IBM RS/6000 version.

In addition, Datalogix International, Inc., a maker of process manufacturing software, last week was scheduled to announce a deal with Oracle in which the

database vendor will purchase 15% of Datalogix and jointly sell the software.

Analysts said migrations to client/server manufacturing software can be even trickier than a more standard financial application or human resources software deployment. Manufacturing processes are more varied and complex — process manufacturers use different procedures than a consumer goods man-



ufacturer, for example. As a result, it is not uncommon for a manufacturing software migration to turn into a multiyear effort, analysts said.

Steady climb

Gartner Group, Inc. recently released manufacturing software revenue projections that show the market will hit close to \$3 billion this year, with overall growth of about 15% a year through 1998. By the end of this year, the majority of software and services revenue should come from open systems sales, said Erik Keller, a Gartner vice president.

But that does not translate to client/server sales because the open systems piece can include host-based Unix operations, Keller cautioned. Currently, full-blown client/server sales are too small a slice of overall sales to isolate, he added.

Some manufacturing users contacted last week said they will stay with their host-based software providers as they move to client/server.

Gerry Haslam, manager of MIS at FBM Distillery Co. in Brampton, Ontario, is running Ross Systems software on a host-based Digital VAX platform and

Manufacturing, page 91

IBM aims to strengthen 390 base with VM, VSE updates

By Craig Stedman

■ MVS may get most of the hoopla, but there is life left in IBM's other mainframe operating systems — a point the company tried to reinforce earlier this month with new versions of VM and VSE. Both offer added features that have been high on customers' wish lists.

VM/ESA Version 2 and VSE/ESA Version 2 were part of a mid-September mainframe rollout aimed at keeping small and medium-size shops in the System/390 fold [CW, Sept. 12]. Key additions include multiprocessor support for VSE and OpenEdition VM/ESA, which implements the Open Software Foundation's Distributed Computing Environment (DCE) technology (see box).

Bob Djurdjevic, president of Annex Research in Phoenix, said IBM appears to have accepted that smaller shops are not going to convert to MVS en masse. The new VM and VSE releases are further evidence that IBM has "given up on its efforts to shift customers from the left pocket to the right pocket," Djurdjevic added.

Entrenched base

In fact, VM and VSE — often used together, with VM acting as a host — still account for a combined 63% of the 17,441 IBM mainframe operating system licenses installed in the U.S. as of August, according to Computer Intelligence/InfoCorp, a market research firm in La Jolla, Calif. VSE, with 6,227 licenses, was just shy of the 6,370-license MVS installed base.

Luther Perry, information services director for the county of Santa Cruz, Calif., said he periodically considers switching his 40-MIPS VM/VSE environment to MVS. But the conversion would cost about \$1 million and require hiring additional programmers, he noted.

"If we were starting from scratch, we'd probably do it [with MVS]," Perry said. "But as you grow along one path, it tends to get expensive to change. And I'm not going to spend \$1 million of county money unless I have a good business reason."

The new features in VM and VSE

should make it even harder to justify a conversion, Perry added. He said he particularly welcomed the promise of multiprocessor support in VSE, which could reduce the need to implement VM as a host. That change would lower the county's software licensing bill, Perry said.

The county runs CICS applications on 10 separate VSE implementations but could not take full advantage of its dual-processor 3090 Model 200S without VM onboard, Perry said. Manual work load balancing is also required, a task the multiprocessor capability "could really streamline," he said.

The county would not totally eliminate VM, which it uses to run several applications such as word processing and elec-

tronic mail, Perry said. DCE support in OpenEdition VM/ESA also interests him, although it may be "a couple years before we get too deep into that," he added.

Stan Johnson, director of MIS at Worldport LA, the port authority in Los Angeles, also said he liked what he heard about the VM and VSE releases. Support for graphical user interfaces (GUI) especially caught his attention, Johnson said, adding that the lack of GUI capabilities "has been an issue of contention."

Worldport LA is developing an initial client/server application, based on Sun Microsystems, Inc. hardware and Sybase, Inc.'s database, to manage a series of construction projects starting next year, Johnson said. The Sun/Sybase application is scheduled to go live in February or March, he added.

However, the timing of additional client/server projects depends on the results of the first one, and Johnson said he expects to stay with the mainframe until at least 1997 or 1998. "VM and VSE are much better products than they were five or six years ago, so I really can't chide IBM," he said.

VSE/ESA Version 2 is scheduled for customer delivery in April, IBM said. VM/ESA Version 2 is supposed to start limited shipments in March, but a general availability date has not been set. Both will run on the general-purpose CMOS-based mainframes that IBM introduced this month.

Forget me not

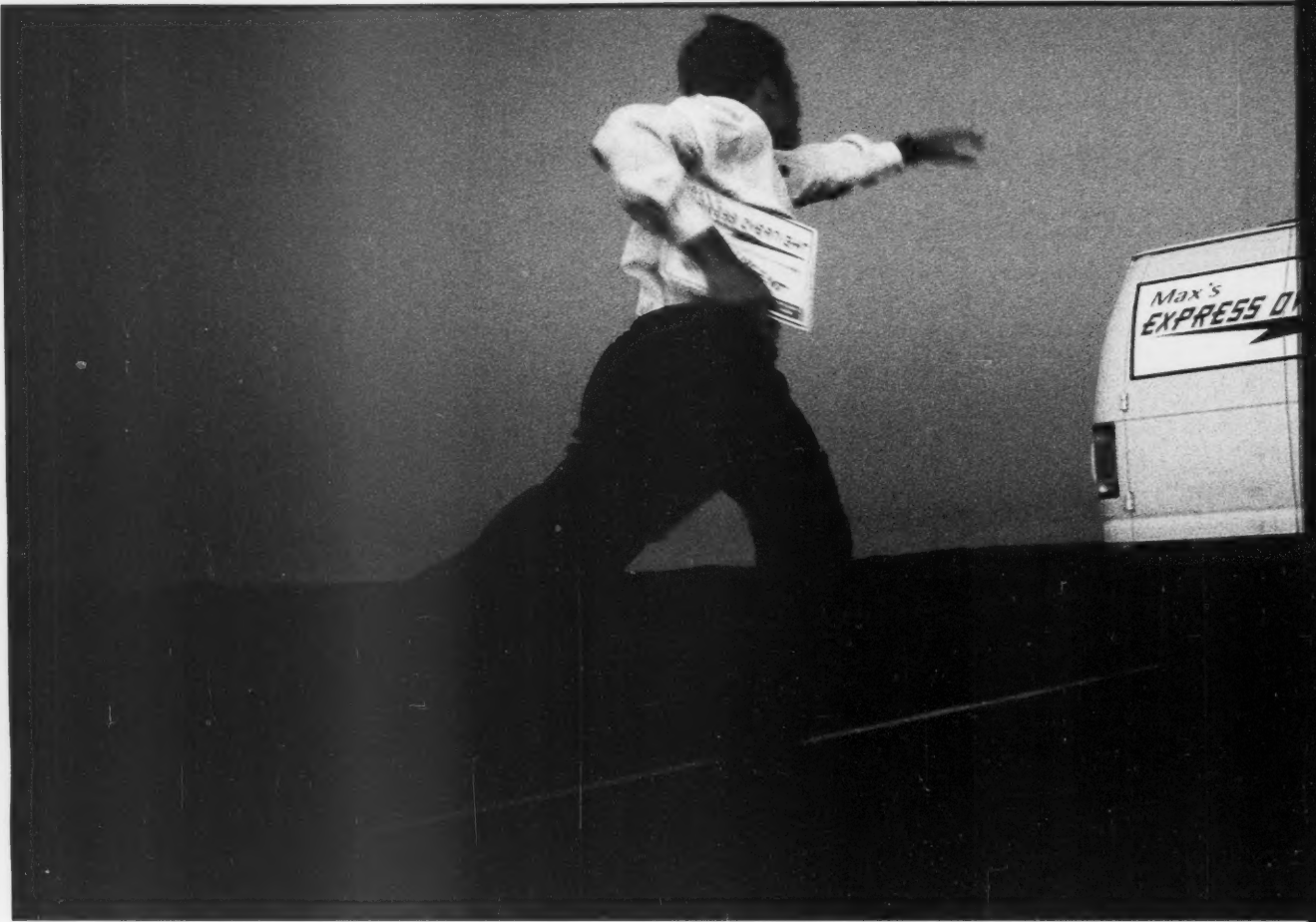
Features added to the new versions of VM and VSE include the following:

VM/ESA Version 2:

- DCE and Posix support via OpenEdition VM/ESA
- GUI support
- Dynamic I/O reconfiguration
- New data-compression API

VSE/ESA Version 2:

- Multiprocessor support
- VSAM data compression
- NetWare file storage via LAN Resource Extension and Services software
- Adstar Distributed Storage Manager
- GUI support
- Code reuse with MVS/ESA



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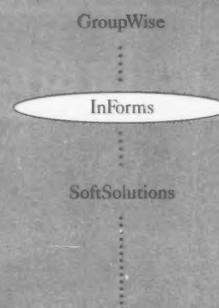
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Storage media integration pays off for bank

By Thomas Hoffman

Integra Financial Corp. is integrating its nascent optical storage subsystems with its direct-access storage devices (DASD). This represents a growing trend among companies trying to leverage the benefits of a multimedia approach.

"There will be tremendous demand for hierarchical storage as people try to take advantage of the best characteristics of each medium that's available to them," said Scott McCready, a principal at IDC/Avante in Framingham, Mass. As PC LANs continue to proliferate among corporate departments, the ability to manage storage across multiple environments will become more pressing than ever, McCready said.

For its part, Integra, a Pittsburgh-based commercial bank, started its balancing act last autumn when it switched its mainframe-based record-keeping from microfiche to on-line optical discs. Its computer output to microfiche systems was slow and expensive, and users did not have on-line access to the 3,500 daily reports that the bank's two IBM 3090 mainframes were generating.

Expensive but speedy

While an optical-only system would have been a more cost-effective solution than microfiche, such a system would still result in 30-second retrieval delays for

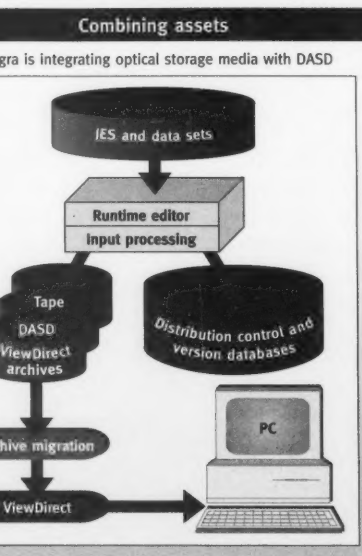
some archived data. This is due to the time it takes for the mechanical arm of an optical jukebox to select and position the correct disc.

DASD storage can cost 10 times as much as optical (analysts have placed DASD storage in the range of \$5 per megabyte, while optical storage is closer to 50 cents per megabyte), but DASD allows Integra users to access the most recent data in two to three seconds.

Based on its requirements, Integra took the hierarchical approach. "We really needed a first layer to provide users access to daily reports," said Diane DeCort, manager of information services for the \$13.9 billion bank. That first layer turned out to be DASD.

Integra's IBM mainframes transmit daily customer reports through the company's IBM 3880 and 3990 DASD controllers to its IBM disk farm for storage. Last fall, Integra began using Mobius Management Systems, Inc.'s ViewDirect software to index data on to both the DASD and optical media.

Daily reports are kept on the DASD for three days, after which they are downloaded from the mainframes through a



FileTek, Inc. Storage Machine/2 (SM/2) controller and burned into 12-in. optical discs housed in a FileTek SM/2 jukebox.

More than 400 Integra users are now able to access and generate customer reports on-line using IBM 3270 terminals,

along with a mix of IBM and AT&T Corp. PCs equipped with 3270-emulation software.

To date, Integra has transferred more than 90% of its microfiche records to optical discs. The bank expects to complete the conversion by the end of next month. Still awaiting approval is the migration to optical discs of mortgage loan data housed in microfiche by a third-party service bureau. DeCort said she hopes to begin the migration by mid-1995.

The optical system has paid big dividends to the bank. In the past, Integra spent roughly \$1 million annually on microfiche production, maintenance and operator costs. In contrast, the optical system, including hardware, software, media costs and maintenance expenses, averages \$570,000 per year, amortized over five years.

Integra has also experienced quantifiable productivity gains with the optical system. Using the microfiche system, the bank's research and adjustments department handled 25 customer statements an hour. With the on-line optical system, the unit processes 49 statements per hour, nearly twice as many as with microfiche.

Software 2000 object applications blaze client/server trail despite late arrival

By Craig Stedman

Software 2000, Inc. finally started delivering last week on its promise of object-oriented applications for IBM's AS/400 systems — a client/server offering that the company's customers have waited for through a prolonged gestation period.

The object technology is appearing first in a new version of Software 2000's human resources package just released for beta testing. The product is scheduled for general availability by year's end, followed by financial and materials management modules (see chart).

The new lineup, expected to be called Infinium, was originally scheduled for shipment late last year and then the middle of this year. Only client-level software is being released now because the IBM Smalltalk object programming language that Software 2000 uses will not support the AS/400 until 1995.

Nonetheless, analysts said the Hyannis, Mass., company is one of the first vendors of traditional business applications to adopt a fully object-oriented strategy, particularly for the AS/400.

"This is definitely leading-edge," said Clare Gillan, direc-

tor of applications research at International Data Corp. in Framingham, Mass. "They actually took a big risk in deciding to bypass some interim [client/server] technology alternatives and wait for pure object orientation."

Other AS/400 software vendors such as Marcamp Corp. and System Software Associates, Inc. already have client/server products on the market. But several Software 2000 customers said the desktop control and flexibility that object technology promises give Infinium a lot of appeal.

"It's easy to take a standard application and give a [graphical user interface] look to it," said Karen Barker, manager of human resources applications at Arvida, a developer of master planned communities in Boca Raton, Fla. On the other hand, Software 2000's approach appears to provide "a whole new way of looking at and defining the information that you're trying to work with."

Arvida, which is one of the beta sites for the new software, previously left personnel records "pretty much to the experts in human resources," Barker said. But Infinium's object-based user interface should make it feasible for functional managers to di-

Faster choice

Infinium's repository of business objects can be stored on the AS/400, but putting it on an intermediate LAN server should provide faster transfers of objects to clients, said Jeff Broberg, vice president of research at Software 2000. The repository includes all logic and definitions for the objects, allowing end users to customize their applications, he added.

rectly access employee data, she added.

"Our users are looking forward to the additional freedom they're going to get with their data," said Cindy Nakahara, information systems project manager at Nintendo of America, Inc. in Redmond, Wash. "They'll have control of the data and essentially get to program their own applications."

Demo Tsagarakis, director of MIS at Alpha/Owens-Corning Corp. in Collierville, Tenn., said that judging from briefings by Software 2000, he does not expect "anything tangible that we can use for a year." Still, Infinium looks "very desirable," and Alpha/Owens-Corning, a maker of polyester resins, is interested

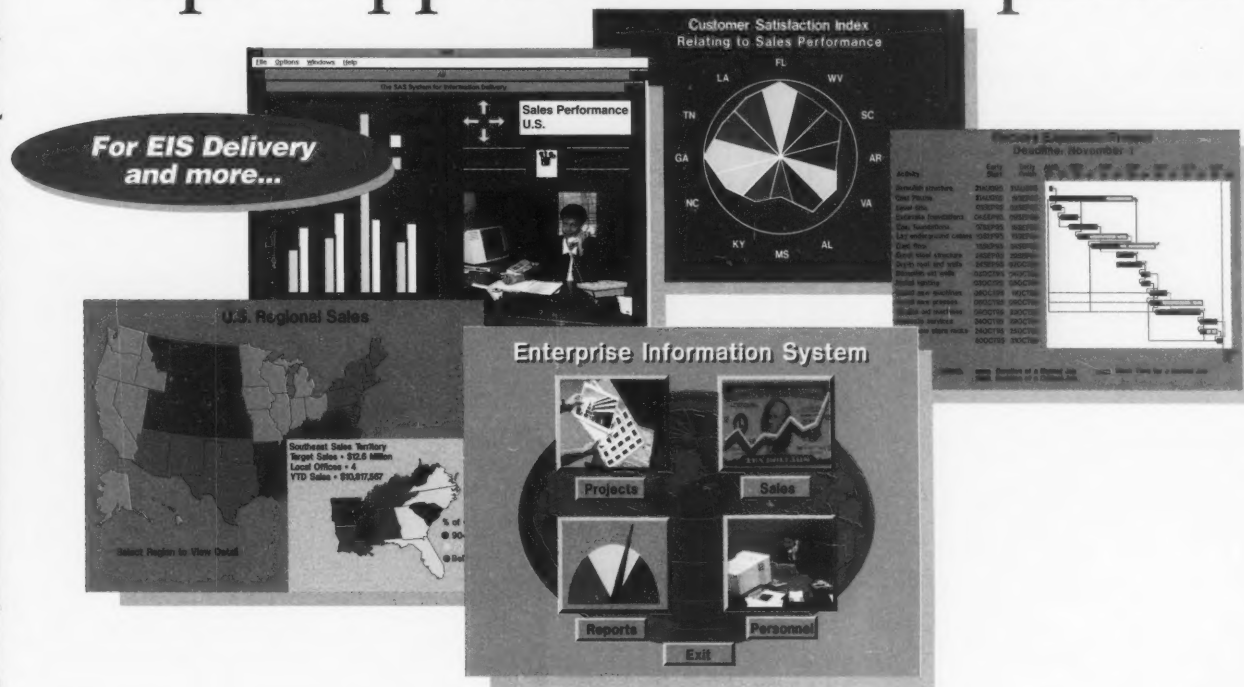
in being a beta site for the materials software, Tsagarakis added.

The Infinium client software requires 486-based PCs, Software 2000 said. While the clients can access AS/400 data, the lack of Smalltalk support for the AS/400 means the first release of Infinium "won't have what people would consider pure distributed objects," acknowledged Jeff Broberg, vice president of research at Software 2000.

Distributed capabilities are scheduled to be added in a second release, and prospective customers said the two-step rollout might actually work to their benefit by letting AS/400 programmers ease into objects. "The whole concept of object technology is going to take time to get used to," Barker said.

Object trail	
SOFTWARE 2000'S FIRST OBJECT-ORIENTED PACKAGE FOR HUMAN RESOURCES WILL HAVE ABOUT 25 PRIMARY OBJECTS AND 150 SUPPORTING OBJECTS	
Infinium Delivery Schedules	
Applications Human resources Financial management Materials management	Fourth quarter 1995 To be announced
Clients Windows OS/2 Windows NT Macintosh	Fourth quarter 1995 Fourth quarter 1995
Servers AS/400 Windows NT Unix systems	Fourth quarter 1995 1995/1996

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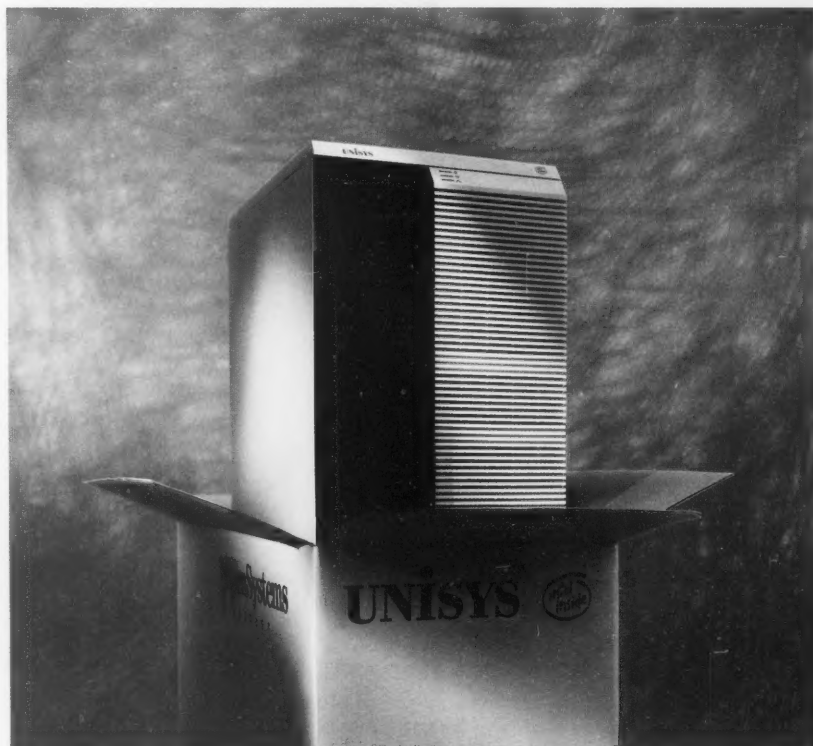
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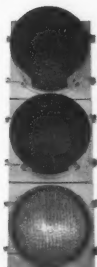
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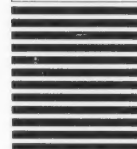
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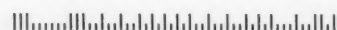


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Large Systems

BGS Systems, Inc. has announced Best/1-Visualizer for CICS and Best/1-Visualizer for DB2, PC-based performance and capacity management software.

According to the Waltham, Mass., company, the products display standard performance data for CICS and DB2 so users can manage the performance of these environments.

The products include graphics presentations, reduction of CICS or DB2 data, a multilevel view of CICS or DB2 activity and correlation of CICS or DB2 performance with data from other sources.

Prices start at \$14,500 for Best/1-Visualizer for CICS and \$25,000 for Best/1-Visualizer for DB2.

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Legent Corp. has announced options for its Xcom and MLink/ACM data transport product lines.

According to the Herndon, Va., company, the options provide managed distribution and collection of data across TCP/IP networks for MVS, Unix or OS/2 servers.

The Xcom for Brixton option provides file transfer between Xcom and Unix machines connected to a TCP/IP network via CNT/Brixton's SNA-TCP/IP software. The Xcom for AnyNet option provides data transport between MVS and OS/2 servers. The MLink/ACM option lets

servers manage the distribution and collection of data to and from PCs as well as workstations.

Prices range from \$1,500 to \$100,000.

► **Legent**
(703) 708-3000

Princeton Softech, Inc. has announced Move for DB2, a relational extract tool that eliminates the need to write DB2 extract programs.

According to the Princeton, N.J., com-

pany, Move for DB2 lets users select rows from one table, then automatically extracts them, along with related rows from other tables, and copies them to another DB2 database.

Move for DB2 supports all relationships among DB2 tables, including multiple relationships among tables and cyclical relationships. Move for DB2 costs \$27,500 for one CPU.

► **Princeton Softech**
(609) 497-0205

Manufacturing

CONTINUED FROM PAGE 85

plans to look to Ross when the company takes the client/server plunge.

"We have too much invested to do anything else," Haslam said. "We have invested a lot of time and energy to getting it where it is. To go anywhere else would be major trauma."

Slow pace

Some Cincom users said they were pleased with the steps Cincom is making and expect they will be able to take a gradual approach to the new platform.

"Our plans are to look at the products as they come out," said Jim Godfrey, vice president of communications and information manager at Magnavox Electronic Systems Co. in Fort Wayne, Ind. "We are doing some client/server, and we are developing some new client/server apps of our own. But we don't have a particular schedule. It is really based on the needs of our clients."

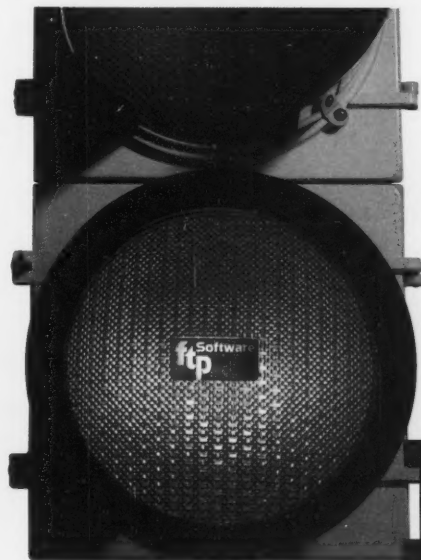
Charles Phillips, an analyst at Kidder, Peabody & Co. in New York, said manufacturers have "been lagging in terms of adopting client/server technology, probably by two or three years. Now they are coming up the curve."

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Application Development

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Battle lines drawn in gateway market

Oracle, Sybase increase efforts to attract users via third parties

By Kim S. Nash

It may lack the slime and gore of Godzilla vs. The Thing, but Oracle Corp. and Sybase, Inc. are set to battle each other for what users and analysts say is a potentially monstrous market: database connectivity.

In an effort to lure users who want to retain legacy databases but add the likes of Sybase or Oracle products—or both—to their shops, both database big shots offer gateways to other vendors' relational and nonrelational databases. And Oracle and Sybase each provide a combination of gateways, some built in-house and some offered via partnerships with third-party suppliers.

While the titans roar, however, users scramble to figure out who can connect which to what.

In its traditional buy vs. build style, Sybase acquired Micro Decisionware, Inc. five months ago for \$25 million. The Boulder, Colo., gateway maker, which became a Sybase subsidiary in April, instantly added more than a dozen new database connections to Sybase's existing six or seven [CW, May 9].

Meanwhile, Information Builders, Inc. (IBI) is Oracle's chosen partner, though IBI is also working with database rival Informix Software, Inc. Two weeks ago, Oracle announced additional plans to further integrate its own middleware products with IBI's Enterprise Data Access/SQL gateway. That combined product is slated to ship to beta testers at the end of the year.

A casual perusal of database forums on CompuServe recently found several Sybase and Oracle users wondering whether specific combinations of front ends, servers and operating systems were supported by a given vendor.

"Middleware products let you get the data at its source... but that doesn't mean it's easy," noted Becky Henderson, a senior database administrator at The Associated Group, an insurance firm in Indianapolis.

Prices factor in

The Associated Group plans to replace an Oracle database with Sybase's OmniSQL Gateway in a remote application where dial-in users pull data off an IBM mainframe. The existing setup with Oracle mandates that entire tables of data be downloaded to local PCs whenever users seek to analyze information.

The Associated Group's information systems staff calculated they could save money by giving users direct mainframe access rather than forcing batch reports on users or trying other unwieldy techniques. Still, management withheld its approval for several months because of the high cost of Sybase's OmniSQL Gateway, Henderson explained.

Middleware itself is not cheap, she said. Then Sybase decided to deal. "At the end of last year, Sybase lowered prices and offered an extra discount on mainframe

In the middle		
Neither database powerhouse could supply enough middleware on its own to answer demands of users who wanted to keep legacy databases		
	PARTNER	COMMENTS
Oracle	Information Builders	Oracle is just one of IBI's several partners, but IBI's EDA/SQL gateway gives Oracle links to more than a dozen non-Oracle products
Sybase	Micro Decisionware	Sybase acquired Micro Decisionware outright in April, along with substantial R&D resources and gateways to 20 other databases

products," Henderson said. Ultimately, The Associated Group bought OmniSQL Gateway for less than half of the \$250,000 it originally estimated it would spend, she said. That figure was based on quotes from Sybase.

Overall, the gateway market is expected to top \$1 billion by 1997, according to Forrester Research, Inc. in Cambridge, Mass. Sybase, with its Micro Decisionware acquisition, is "in a good position to weather eroding database engine margins" by pushing gateways, said Donald A. DePalma, a Forrester analyst.

Price of Forte's client/server tools may stymie sales

By Melinda-Carol Ballou

■ Forte Software, Inc. has joined the vanguard of vendors shipping tools that target higher-end client/server development.

The product, also called Forte, offers a slew of flashy capabilities, according to company officials. But pricing is an issue: At a starting price of \$75,000, it is significantly more expensive than some competing products, analysts said.

Dynasty Technologies, Inc., for instance, announced a new version of its tools earlier this month, with prices starting at \$8,000 [CW, Sept. 12].

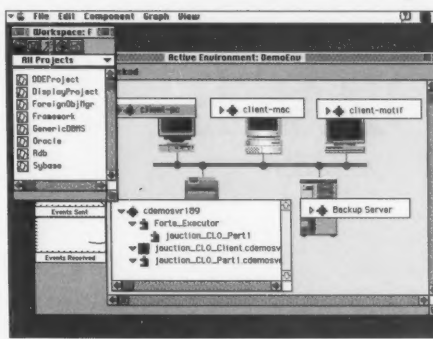
In addition to its high price tag, Forte's proprietary fourth-generation language (4GL) could hurt the company in its bid to woo low-end to midrange sites that have embraced Powersoft Corp.'s PowerBuilder or Microsoft Corp.'s Visual Basic.

"It's expensive, and unless you know you have a problem and are willing to take a jump into a proprietary environment, you're unlikely to go for it," said Donald A. DePalma, an analyst at Forrester Research, Inc., a Cambridge, Mass., consulting firm.

Forte officials said the pricing is not exorbitant for the high-end market. Some Fortune 500 users agreed.

"For our core development system, \$75,000 is reasonable since there's a lot of functionality in there," said Bill Bedor, director of information technologies at Medtronic, Inc., a medical device manufacturer in Minneapolis. Medtronic created a customer profile application that is in production for one of its business units. Bedor's next job is to rewrite an order-entry system that will support more than 100 users.

But US West Enhanced Services, Inc., a fax services company in Denver, considered price an issue. "I thought the cost was high, but in terms of improved programmer productivity, it's probably pretty reasonable for very large projects," said Bob Robinson, software engineering manager at the company. Forte met the firm's wish list, he said. US West Enhanced needed a 4GL and a tool that allowed distributed client/server development across Sequent Computer Sys-



Forte's features include a designer for graphical user interfaces and support for workgroup development

tems, Inc. servers and X Window System terminals.

Forte supports the creation of applications using high-level business functions, called "business services," which are encapsulated objects, officials said.

Forte applications are built independently of platforms. Developers build a single logical application definition, which is stored in Forte's repository. The developer then defines one or more deployment environments, and the Forte system automatically maps the applica-

tion to the target environment.

Forte's features include default application partitioning, a designer for graphical user interfaces, a set of class libraries, a repository, an interactive debugger and support for workgroup development. Partitioning allows developers to split processing for an application across different clients and servers to optimize performance, officials said.

Test run

Electronic Data Systems Corp. in Plano, Texas, is evaluating Forte for possible inclusion in its roster of recommended products, said Robert Gerboth, a systems engineering manager at EDS. The initial application, a 100-user system to schedule conference rooms, has gone smoothly, he said.

Gerboth will put Forte through its paces on a high-end application next spring. "Our expectation is that Forte will be a viable product to use on larger projects," he said.

Some industry analysts were more skeptical, however. "I would continue to tell my customers only to use proven tools until high-end applications are actually built and successfully run," said Richard Finkelstein, president of Performance Computing, Inc., a Chicago consulting firm.

Lab adopts multimedia 'receptionist'

Enlists Visual Appbuilder in effort

By Melinda-Carol Ballou

"We no longer have a receptionist in the lobby," says Lisa Carmody, executive secretary to the president at Stonybrook Laboratories, Inc., an environmental and toxicological testing lab in Pennington, N.J. In economic times like these, it just does not make sense, she said.

This month, the lab installed a multimedia kiosk to greet visitors and provide safety information and employee and lab data, including a companywide organization chart and map to guide visitors.

"Because of the nature of the business we're in, you need information about where you're allowed to go freely and where you need to wear respirators, for instance," Carmody said. "It's a touch screen, and you barely have to touch it to get it to respond. So you don't have to stand there waiting."

For example, visitors may be advised to seek out the safety coordinator for further data. The coordinator's picture then appears on the screen along with her extension number, room number and a floor plan to help locate her office. If she is unavailable, a personnel chart helps users find another employee in the same department, Carmody said.

Stonybrook Laboratories would not have

expended the resources to complete the kiosk, however, if it did not have access to Visual AppBuilder, Novell, Inc.'s visual development tool.

"I see this as an enabling tool — letting us do things that we otherwise wouldn't consider spending our time on," said Lisa Vaz, manager of software development at Stonybrook.

ON SITE

Stonybrook Laboratories, Inc.
Pennington, N.J.

Challenge: To incorporate safety regulations and visitor information into a multimedia kiosk that greets guests.

Technology: Novell's Visual AppBuilder.

Results: An application that can be easily modified.

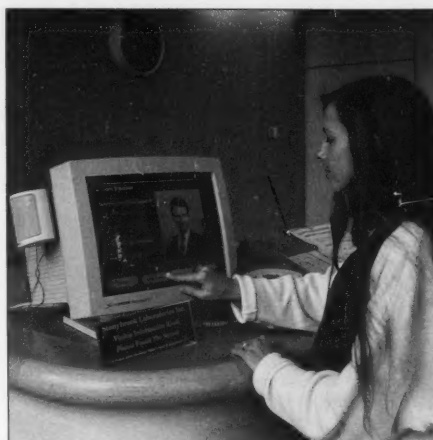
Quick and easy

It took consultant Matt Quagliana about two months to complete the application, which was then delivered to the lab for user testing. Making changes to the application during and after testing was easily accomplished, in part because of the way Quagliana set up the application.

"We built it so that every visible screen is in the database. If the IS department wants to change the layout of the kiosk, they do so by going into the database," said Quagliana, president of Cerebus Corp., a Dallas-based consulting firm.

Vaz said the graphical code construction techniques available with Visual AppBuilder allow her group to easily maintain the system. "We made a lot of adjustments during user testing and were able to turn it around really quickly," she said.

AppWare Loadable Modules (ALM) are chunks of canned code for Visual App-



Stonybrook's Lisa Vaz demonstrates the multimedia kiosk, which helps visitors locate lab employees

Builder that facilitate the development process, Vaz said. To provide new features, developers merely hook ALMs into an application. During the beta process, for instance, a new ALM that supports audio CD controllers came out for Visual AppBuilder. Vaz and her staff were able to plug that ALM into the existing software to add support for CDs.

"When not in use, the kiosk plays music and shows pictures about our lab and the work we do. Because it's attractive, visitors are drawn to using it," Vaz added.

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Application Development

Visual Numerics, Inc. has announced IMSL C Numerical Libraries for Windows NT and IMSL Exponent Graphics for Windows NT, mathematical, statistical and graphical libraries.

According to the Arlington, Texas, company, the products target developers familiar with International Mathematical and Statistical Libraries, Inc. (IMSL) tools on the mainframe who want to downsize and PC C programmers who want to use prewritten code.

IMSL Exponent Graphics for Windows NT provides more than 30 presentation-quality, two- and three-dimensional technical graphs through high-level function calls.

IMSL C Numerical Libraries for Windows NT costs \$695, and IMSL Exponent Graphics for Windows NT costs \$895.

► *Visual Numerics*
(713) 784-3131

EMS Professional Shareware has announced Pdx Utility Library, a library of public domain and shareware products, based on Borland International, Inc.'s Paradox, for professional programmers.

According to the Olney, Md., company, the library contains application, array,

backup, bar-code, benchmarking, tutorial, user interface, validation, video, Windows, work space and ZIP code file types.

All products are compressed on CD-ROM or floppy disks and are described in an indexed database.

Pdx Utility Library costs \$59.

► *EMS Professional Shareware*
(301) 924-3594

Alslys, Inc. has announced ActivAda for Windows, an Ada integrated development environment.

According to the San Diego firm, ActivAda supports the entire development cycle, including editing, compiling, binding/linking and debugging.

The product includes full 32-bit code generation and provides for multilanguage debugging.

ActivAda for Windows costs \$995.

► *Alslys*
(619) 457-2700

Stanford Technology Group, Inc. has announced SQL Studio 2.0 for Oracle Corp.'s Oracle 7, a graphical programming environment.

According to the San Francisco company, SQL Studio 2.0 provides visual editors for all key Oracle 7 objects, including stored procedures, functions, packages, triggers, tables, constraints, indexes, views, roles, grants and sequences.

The product supports team development with a check-in/check-out feature, includes an Explain Plan function that lets users view the access path for any SQL statement and lets users run SQL scripts from their PC.

SQL Studio 2.0 for Oracle 7 costs \$495.

► *Stanford Technology Group*
(415) 247-6540

SuccessWare, Inc. has announced SixBase/VB 1.0, a replacement database engine for Microsoft Corp.'s Visual Basic and Visual C++.

According to the Temecula, Calif., company, SixBase/VB 1.0 provides a common record-based data management syntax during program development and supports database-compatible concurrent-access locking on networks.

Other features include conditional indexes, index scopes and record-level data encryption. Mach Six, SuccessWare's integrated query-optimizer, is included in the product.

SixBase/VB 1.0 costs \$149.

► *SuccessWare*
(909) 699-9657

AutoTester, Inc. has announced AutoTester 2.0 for the OS/2 Presentation Manager, a testing and verification tool for graphical user interfaces.

According to the Dallas company, AutoTester 2.0 provides test synchroni-

zation, dynamic window placement and positioning, advanced control querying and manipulation and actual text retrieval.

The command set was developed specifically for the OS/2 Presentation Manager and provides word processing-type editing of tests and a tool bar. An AutoCommand feature generates a documented automated test instead of recording only a series of keystrokes and mouse events.

AutoTester 2.0 for OS/2 Presentation Manager costs \$5,000.

► *AutoTester*
(214) 368-1196

A&G Graphics Interface has announced Custom Voice, a speech-recognition development tool kit.

According to the Boston company, Custom Voice lets developers using Microsoft Corp.'s Visual Basic and Visual C++ develop speech-recognition tools.

The product features an interactive grammar debugger, prebuilt grammar files for common data types, sample custom voice applications and a set of parser application programming interface functions. Source code for the sample applications is provided to illustrate the product's functionality.

Custom Voice costs \$495.

► *A&G Graphics Interface*
(617) 445-6975

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Management

■ CLIENT/SERVER



SHUFFLE

BY KEVIN BURDEN

When Lincoln National Corp. decided to move to a client/server setup three years ago, information systems employees expected big changes. They got 'em—in a really big way.

Without the transition even being complete, half the IS staff at the Fort Wayne, Ind., insurance and financial services firm found themselves out the door, their services no longer required.

"We eliminated every business analyst position we had and all liaison positions whose job it was to communicate their team's needs to the business analyst," says Bob Malik, senior vice president and chief information officer. "Even the information resource center where we would provide end-user computing tools was deemed unnecessary and eliminated. Now that we could give our customers the tools which allowed them to access the data directly, we no

When companies
Who will
move to client/server,
remain players,
many IS
and who will
professionals may
be out of
find themselves
the game?
scrambling for a seat.

longer had any need for these middle people."

This degree of bloodletting may sound extreme. But as client/server forces managers to reevaluate staff, the message for many is clear: Change your ways or plan to look for a new job.

Sink or swim

When a company switches from its traditional legacy systems to a client/server architecture, one-third of the typical IS staff is willing to make the transition to the new environment and views it as an opportunity to learn new skills, according to Peter Kortman, president of Tri-Pacific Consulting Corp. in Alameda, Calif. Another third stays because they know the move is inevitable and go along to keep their jobs, while the remaining third either fails or is not given the opportunity to make the transition, he says.

Of the ones who don't survive, Kortman says, some are unable to master the personnel or tech-

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SHUFFLE

CONTINUED FROM PAGE 97

nical skills required of the changed development process. Others look for companies where they can still use their industry and technical skills. Some lack the motivation to learn a new skill set. And some occupy positions that are no longer needed.

That was the case at Lincoln National, where half the IS staff was cut just as the company began moving to an IBM RS/6000-based client/server system. Lincoln National probably won't make the full transition to client/server until the technology becomes robust enough to handle large transaction-based insurance systems. But even with the IBM mainframes still running the company's administration systems (accounts payable, fixed assets, etc.), 50% of the IS staff became expendable.

Learning new technical skills isn't the only challenge. Companies making the transition to client/server often move from a functional, hierarchical organization to a flat, process-oriented one. And in that move, many IS staffers can find themselves working hand in glove with their customers.

Some people may find this new intimacy uncomfortable and have a hard time adjusting. Others will welcome the change and flourish in the new relationships. Still others will find themselves assuming very different roles.

At Lincoln National, working more closely with business operations produced a shifting of certain IS roles, Malik says. For example, the positions of business analyst and programmer could be merged into one — programmer/analyst. The new position is responsible for taking specifications from customers and working through a project's development. Business analysts who could master the soft skills needed to coach users were able to move into these jobs.

Other companies have introduced this new partnership with less loss of life, but old dogs have to learn new tricks.

PNC Mortgage Corporation of America in Vernon Hills, Ill., is in the first year of a three-year client/server transition and realizes that much of the information management function will need to be done at the business partner level.

"Our users are challenged with the task of codeveloping the system with us: Some will be up to it, others will not," says Leilani Allen, senior vice president of information technology.

Allen accepts that there will be a transformation of IS and user roles. But she is not convinced that there will be fewer people in them.

"We are not saying people will be out of a job; we are saying that specialization will be eliminated," Allen says. "Someone who knows operating systems on only one platform is not a value to me. Specialists will be out. Generalists will be in."

Chargeback operators may also find themselves a hard fit in the new environment. Because client/server hardware is considerably less expensive than centralized processing, the need to track user usage is no longer crucial.

"If a company decides it no longer needs to run chargeback systems, those operators could be out of a job," says Bradley Hecht, a research analyst at Gartner Group, Inc. in Stamford, Conn. "Part of the problem is there are no viable tools available to effectively do charge-

"We expect to see a nomad culture evolve where these people who don't want to take the time to learn client/server migrate to other shops still using a familiar technology."

— Doug Aldrich, vice president of North American information technology practices at AT Kearney in Chicago

could be in a lot of trouble without the proper retraining," Bergstein says.

Now that stored procedures within server databases can fend off corrupted and incomplete transactions, transaction processing (TP) monitors such as IBM's CICS are no longer needed, according to a new report from Forrester Research, Inc., a market research firm in Cambridge, Mass.

"TP monitors undermine client/server's inherent flexibility, making it difficult to respond to customers' demands," says Bobby Cameron, senior analyst at Forrester. "CICS staff members will need to learn the new development skill or be out of a job."

"We have seen the number of these [mainframe] people looking for placement multiply and the

just not there yet for our new environment," Malik says. "We are providing our legacy staff with the skills and the tools — everything possible to convert them. If they are unable to make the transition, it becomes their own fault."

Sweetening the deal

While losing employees appears to be inevitable during most client/server transitions, the challenge for management is to minimize the loss of valuable employees. One way to do so, notes Steve Guengerich, president of BSG Education, is to turn what might seem to be a job-threatening situation into a career opportunity. Because retraining must take place, it might make sense to allow certain staff members to choose their own path or new job function.

"It becomes an opportunity for them because they now have more control over their own destiny," Guengerich says.

Still, even with the opportunities learning a new skill set presents, some in high-value positions with all the abilities to make the jump will still choose not to.

When Chicago-based Richardson Electronics Ltd. moved from its Pick-based legacy systems to a Data General Corp. Avion client/server system, it lost two IS staff members in important, seemingly secure positions — operations manager and telecommunications manager.

"Neither one wanted to be a part of the new environment," says Kevin Reilly, vice president of IS. The departures freed up two high-powered salaries, enabling Reilly to hire four Unix specialists. Nevertheless, he shares the view of Gordon Kerr, senior vice president of MIS at Regency Systems Solutions in Oakbrook Terrace, Ill., who says, "The value of an IS employee is reflected not only by his or her technical skills but also by their knowledge of your business."

Likewise, those who left Regency Systems Solutions during its transition — mostly programmers — did so because they wanted to continue working on the airline control program where they had become experts.

"We expect to see a nomad culture evolve where these people who don't want to take the time to learn client/server migrate to other shops still using a familiar technology," says Doug Aldrich, vice president of North American information technology practices at AT Kearney in Chicago.

"Some will rather change companies to stay with the technology rather than change technologies to stay with the company," Kerr says.

Burden is *Computerworld's* senior researcher, CW Guide.

ENDANGERED SPECIES?

Like a giant meteor hitting the Earth, client/server will have a big impact on information systems personnel. Some IS positions will emerge as the new dominant species, others will evolve into different life-forms, and some will go the way of the dinosaur.

DOMINANT SPECIES?

LAN and WAN specialists: Those in communication positions critical to a network-centric system.

Generalists: Those skilled in many areas on many platforms.

Desktop computing specialists: Those with knowledge of desktop hardware, applications and operating systems.

Masters of the business: Those who are experts on how their business operates, are up to the challenge of codevelopment and are capable of retraining.

NEWLY EVOLVED?

Account executives: Those charged with taking a project from planning through implementation. These positions are often filled with non-IS staff members.

Client/server specialists: Those experienced in client/server application development tools.

DINOSAURS?

Information conduit positions: Those whose job is to translate and communicate data to upper levels. Intermediaries for the IS department and the business side.

Mainframe specialists: Those whose value is limited to a single platform, application or language.

Positions indigenous to the mainframe environment: Cobol coders, chargeback operators, console operators, printer operators, etc.

backs on distributed systems today, which means these people could be out of luck until the tools become more robust."

Also at risk: information conduits, middle management and supervisors — all people who communicate or translate data to upper management. They will be heavily scrutinized now that client/server delivers the data directly to those who need it, says Mel Bergstein, chairman of Diamond Technology Partners, a consultancy in Chicago.

These intermediaries can become potential stumbling blocks for the proactive development process required for a successful client/server system that is truly aligned with its business needs.

"Those who have specialized throughout their career, like pure Cobol coders, console operators and mainframe printer operators,

"We are not saying people will be out of a job; we are saying that specialization will be eliminated. Someone who knows operating systems on only one platform is not a value to me. Specialists will be out. Generalists will be in."

— Leilani Allen, senior vice president of information technology, PNC Mortgage Corp. of America, Vernon Hills, Ill.

number of available [mainframe] positions decrease over the past few years, making placement very difficult," says John Challenger, executive vice president of Challenger, Gray & Christmas, an international outplacement consultancy in Chicago. "In this era of short work tenures, we have seen many companies forgo the retraining process and hire experts in the new area right away, leaving many to look for new employment."

Part of the placement problem stems from perceptions that future employers have about someone who was not able to make the transition.

But faced with a market lacking candidates with these new skills, many IS executives prefer to retrain their current staff.

"In the traditional Cobol environment, you could buy that talent out in the street, but people are

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HELP WANTED THE PERFECT CIO

Unum Corp. grew tired of life at the bleeding edge of technology and hired a business-minded CIO to replace John Alexander. Then the new CIO left.

By Julia King

Interested in the top information systems post at a consistently prosperous company that has a well-regarded track record in new product development, customer service and innovative use of information technology?

If so, pack your bags and head north along the Maine coast to Portland. Destination: Unum Corp., a \$3.4 billion disability insurance company in search of a corporate chief information officer. Qualifications for the job include extensive international business experience, a commitment to customer service and a passion for keeping costs down.

And oh yes, you must have an ability to work well in the long shadows cast by the company's two previous high-profile CIOs.

IS professionals with an affinity for making grand plans involving bleeding-edge technology need not apply. Instead, Unum is seeking an implementer, someone who can steer an IS course initially charted by former CIO John Alexander, then recharted by his successor, Bob Best, who left Unum in June after less than a year on the job.

Today, Best holds the top IS post at Provident Life and Accident Co. in Chattanooga, Tenn. Alexander, who served as Unum's CIO for six years,

now runs his own consulting company, Business Technology Consulting, Inc., also in Portland. Both men have left their stamp on the IS strategy that Unum now wants a new CIO to oversee.

For instance, it was during Alexander's tenure that much of the distributed technology in use today was introduced. This includes more than 4,000 PCs running under DOS, Windows

and OS/2, as well as a sophisticated network infrastructure that links some 7,200 employees across the U.S., Canada, the UK and Japan.

"Under John, we had a strong technical focus. Before he came, we had some not very successful implementations, and he was seen as a technical turnaround person," explains Dick Curry, vice president of enterprise technology services and acting CIO. "He was very successful at introduc-

ing new technologies and taking us pretty much from a mainframe to a more distributed mindset."

Others who recall Alexander characterize him as a CIO who liked to push the technology envelope. They also say it was this aggressiveness that eventually caused him to fall out of favor with higher-ups.

"John was driving Unum to the brink of the bleeding edge, so they got rid of the bleeding-edge guy and brought in someone to drive the technology for business' sake," says a company source who requested anonymity.

Life & Accident Co. in Columbia, S.C., which Unum acquired in early 1993. What he brought with him, company insiders say, was a keen eye for value as well as a talent for devising IS solutions to meet real business needs.

A prime example is Colonial's PC and mainframe-based client view system. This system lets Unum representatives view all of a customer's transactions and note customers' questions and concerns on-line. Using the system, the same customer service staffer

can answer all of a customer's questions in a single phone call.

Moreover, marketing and product development teams use the information collected during these calls to design new offerings.

It was during Best's tenure that Unum reorganized. Under its current structure, 12 affiliate companies — and their IS departments — operate more or less independently within a strategic framework. That framework is set by a corporate team of six senior officers, including Chairman and Chief Executive Officer James F. Orr.

By allowing each affiliate "to find its own way," Orr says Unum can more easily meet its ambitious goals by 1998, its 150th anniversary. These include increasing revenue growth, reducing operating expenses and significantly bolstering overall customer satisfaction.

One of Best's first actions was to state in a brochure how IS would help meet these goals. This document became the foundation for the company's overall IS strategy. Essentially, the brochure states that any and all information systems should be designed, managed and maintained by the business units that use them rather than by a centralized IS department.

Best also imported a strong user-oriented approach to building information systems and soliciting ideas and feedback. This, too, remains intact.

During a recent printer acquisition process, for example, business users accompanied IS staffers

"Someone who looks at our strategy and says, 'This is great, but I want to do this to it' is not the person we're looking for. What we're looking for is more of a relationship builder, a collaborative person, and I think it will be very difficult to find that person."

— Ann Waecker
Head of operating
excellence, enterprise
technology services
Unum Corp.

Unum

IMMEDIATE OPENING

WANTED: THE PERFECT CIO

A \$3.4 billion disability insurance company with a proven track record in new product development, customer service and innovative use of information technology seeks top information systems manager.

QUALIFICATIONS INCLUDE:

- Extensive international business experience.
- Commitment to customer service.
- Passion for keeping costs down.
- Ability to steer an already-charted IS course.

Send resume to Unum Corp., Portland, Maine.

Looking back on his tenure, Alexander concedes a certain amount of high-tech pyrotechnics. Between 1990 and 1992, for example, he says Unum implemented client/server systems with IBM 3270 terminals and Windows- and OS/2-based PCs on the client side and Unix and OS/2 servers — without commercially available communications software to link the disparate platforms.

"We got out on the leading edge of client/server technology and built some proprietary tools," Alexander says. "Maybe we were a hair ahead of our time."

Best's focus, on the other hand, was strictly business. He came to the company from Colonial

"We got out on the leading edge of client/server technology and built some proprietary tools. Maybe we were a hair ahead of our time."

— John Alexander
Former CIO
Unum Corp.

Help Wanted, page 104

Crowing roosters.

Insomniac software developers.

NEC
Express RISCserver

**And database managers who'd like to get
home sometime before the farm report.**

[The dawn of Windows NT and NEC MIPS RISC computing.]



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Open RISC Technology

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So that database managers could get home from work at a reasonable hour, the developers of Windows NT™ watched many sunrises from behind their MIPS® RISC computers.

(They chose machines built around the MIPS RISC architecture for two basic reasons: sheer performance and superior technology. Fact is, the NEC V_R4400® MIPS processor is at the heart of some of the most powerful computers in the world.)

Was it all worthwhile? Absolutely. First, Windows NT lets companies move their information management into the future without missing a beat. Or shutting down their mainframes.

Second, the brilliant new database management application made possible by Windows NT—Microsoft SQL Server—makes managing databases simpler. And gets enterprise information to end users easily and fast.

Third, the direct descendant of the machines used to *develop* Windows NT—the powerful, dependable NEC Express RISCserver™—is now available to *run* a new generation of programs. Which means they will run quickly, seamlessly, smoothly. Allowing database managers everywhere to sleep a lot better.

- A high performance Windows NT server
- NEC V_R4400™, 150 MHz MIPS RISC processor, with multiple-processor expandability
- NEC's exclusive MultiRISC™ technology, dividing the architecture into four separate subsystems
- Integrated 32-bit Ethernet® 10Base-T networking
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- Robust transaction processing
- Smooth network integration, with open gateways to many host database systems



Microsoft
SQL Server
for Windows NT
MIPS edition

And the rest is history.

NEC

HELP WANTED

Continued from page 101

all of the meetings and understood all of the pieces and had an equal voice in the decision-making process," Curry says.

In the coming months, he says, business users from Unum's 12 affiliates will also help decide whether the company should lease or buy additional mainframe computing capacity.

But for now, Unum's main IS challenge is to recruit a CIO who can move forward with the information technology strategy the company has laid out for itself. IS is directly involved in the search, says Curry, who helped write the job specifications and is participating in the interview process.

"It's going to take a very special person. Of that, there's no doubt in my mind," says Ann Waechter, Unum's head of operating excellence within enterprise technology services.

"Someone who looks at our strategy and says, 'This is great, but I want to do this to it' is not the person we're looking for," she says. "What we're looking for is more of a relationship builder, a collaborative person, and I think it will be very difficult to find that person."

Some say what Unum seems to want is for Best to return to finish what he started.

"Bob was a very hands-on kind of CIO who built our [IS] strategy and then jumped ship. I just don't think he gave it enough time," one manager says.

That a company would search for a new CIO with a similar philosophy to the one who left isn't very unusual, says Jerry Loev, a consultant at

CSC Impact, an IS consulting firm in Cambridge, Mass. "The only thing peculiar is that they'd admit it," Loev says.

For whatever reason, Best doesn't want to talk about Unum or why he left. Several calls to his office went unanswered. But Paul Bonaca, vice president of IS at Colonial and a close co-worker of Best's when he was at the company, thinks he has a pretty good idea.

Best, Bonaca says, was operations-oriented, having worked his way to the management ranks through underwriting and policy claims functions. At Colonial, "he had almost all of the company internally," Bonaca says.

By contrast, Best's role at Unum was strictly IS. "He was in a staff position and didn't have people working for him," Bonaca says.

Ann Beadle, CIO at Unum America, the company's largest affiliate, says she will look to the new corporate CIO for assistance in acquiring different kinds of IS expertise. Four new systems initiatives, all of which call for the use of outside contractors, are currently under way or being planned at Unum America. "So one of the things I'll be looking for from the new CIO is help in executing an [outside] vendor strategy," she says.

Curry says the new corporate CIO can expect to work with business colleagues well-versed in information technology. Much of their knowledge, Curry says, stems from Unum's 15-year-old

chargeback system under which individual affiliates are billed for things like seconds of CPU time and cylinders of data storage capacity.

Whoever fills the CIO slot can expect to play a key role in Unum's ongoing program of leveraging IS to bolster external customer service. Last year, the corporation set a five-year goal of reducing by 40% the number of insurance customers who do not rate Unum's service as excellent or very good.

Last but not least, prospective candidates for the CIO post should have a lot of experience in international business because Unum's plans call for aggressive expansion in overseas markets. The company already has a presence in Europe, thanks to its acquisition last year of Duncanson & Holt, Inc., a \$500 million London-based insurer. In Canada, Unum's business has continued to grow during the past several years, and now the company is targeting the Pacific Rim. In March, following its acquisition of a license to do business

Bob Best was operations-oriented, having worked his way to the management ranks through underwriting and policy claims functions. At Colonial, "he had almost all of the company internally." By contrast, Best's role at Unum was strictly IS. "He was in a staff position and didn't have people working for him."

— Paul Bonaca
Vice president of IS
Colonial Life & Accident Co.

there, Unum opened its first office in Japan, Curry says.

For the time being, Curry says, "We're still several months off from confirming anyone." So far, Unum has interviewed several candidates for the job. "Maybe we'll have found the right person by year's end," he says.

King is a senior editor in *Computerworld's* mid-Atlantic bureau.

OCT. 9-15

Treasury Management Association 15th Annual Conference. Dallas, Oct. 9-12 — Contact: Treasury Management Association, Baltimore, Md. (301) 907-2882.

Managing the Information Resource: Information Technology and the New Value Equation. Los Angeles, Oct. 9-14 — Contact: The John E. Anderson Graduate School of Management at the University of California, Los Angeles, Calif. (310) 825-2001.

Reseller and Integrator Symposium on Document Imaging. Atlanta, Oct. 10-12 — Contact: The Rheinier Group, North Scituate, Mass. (617) 545-7027.

Ed Yourdan on Object-Oriented Analysis and Design. Washington, Oct. 11-12 — Topics: Object-oriented approaches to requirements definition, encapsulation of process and data, object-oriented Smalltalk, C++ and Cobol. Also scheduled for Oct. 13-14 in Boston. Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

GovCom, the Government Computer and Networking Forum. Washington, Oct. 11-13 — Contact: National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.

Interchange '94. Washington, Oct. 11-13 — Contact: Reed Exhibition Co., Silver Spring, Md. (301) 495-7111.

Infotech '94. Dayton, Ohio, Oct. 11-13 — Theme:

Doing business in today's information technology environment. Contact: J. Spargo & Associates, Inc., Fairfax, Va. (703) 631-6200.

Electronic Messaging Association (EMA) Leadership Conference. Washington, Oct. 12-14 — The conference is four workshops in one: Public Policy Implications for the Electronic Messaging Business, Commercializing the Internet, Electronic Commerce for Business and Government, and Value of Multimedia Messaging. Registration fee: \$495 for EMA members and \$695 for nonmembers. Contact: EMA, Arlington, Va. (703) 524-5550.

The 11th International Conference — Product Data Management Systems. Orlando, Fla., Oct. 12-14 — Theme: Assessing and achieving return on investment. Contact: The Management Roundtable, Brookline, Mass. (617) 232-2223.

College of Healthcare Information Management Executives' (CHIME) Fall CIO Forum. Marco Island, Fla., Oct. 12-15 — Topic: "Managing Care in an Integrated Delivery System — The Role of Information Technology." Keynote presentation by Paul Ellwood, M.D., president of the Jackson Hole Group and consultant to the White House on health care reform. Contact: CHIME, Ann Arbor, Mich. (313) 665-0000.

The Fourth National Court of Technology Conference. Nashville, Oct. 12-15 — The conference is exclusively devoted to technology operating in

and being designed for the justice system. Topics include: What are legal, procedural and practical implications of technologies in the trial process? How are technologies such as imaging, videoconferencing and electronic filing improving courts' productivity and effectiveness? How can new multimedia applications, database and programming designs and open systems architectures benefit the courts? Contact: National Center for State Courts, Williamsburg, Va. (804) 253-2000.

Video Electronic Standards Association (VESA) Advanced Video Interface Technical Engineering Conference '94. Santa Clara, Calif., Oct. 13 — This conference was designed to provide technical information to engineering and product marketing specialists involved in the design, implementation and marketing of video and graphic systems products. Contact: VESA, San Jose, Calif. (408) 435-0333.

Employee Empowerment Involvement Teams. Atlanta, Oct. 13-14 — Contact: Association for Manufacturing Excellence, Wheeling, Ill. (708) 520-3282.

Client/Server Computing in Financial Services. New York, Oct. 13-14 — Topics include maximizing bottom-line impact; exploiting the time-saving, cost-cutting benefits of client/server computing; planning and managing the client/server network; transforming the corporate network into an information highway; and

building an architecture for decision support. Contact: International Business Communications USA Conferences, Inc., Southboro, Mass. (508) 481-6400.

1994 Annual Managed Care Conference and Exhibition and Quality and Utilization Management Conference. Atlanta, Oct. 14-19 — Contact: Marsha Perkins, The American Managed Care and Review Association, Washington, D.C. (202) 728-0506.

Project Management Institute '94 Leadership: Leadership in a World of Change. Vancouver, British Columbia, Oct. 14-20 — Keynote addresses include "Leading in a World of Change" by Bob Kadlec, president and chief executive officer of BC Gas and director of the Conference Board of Canada and the Bank of Montreal; "Everest: Project Success Through Inspired Teamwork" by Sharon Wood, first North American woman to climb Mount Everest and leadership consultant to Imperial Oil, Northern Telecom; "The Essence of Leadership in a World of Change" by David Cleland, Ernest Roth Professor of Business at the University of Pittsburgh and PMI Fellow. Contact: Project Management Institute, Upper Darby, Pa. (610) 734-3330.

The Second ACM International Conference on Multimedia. San Francisco, Oct. 15-20 — The conference will provide an international forum with panels, courses, workshops and exhibits focusing on the synergies between processing and communicating information represented in multimedia. Contact: Daniel & O'Keefe Associates, Inc., Sudbury, Mass. (508) 443-3330.

Calendar

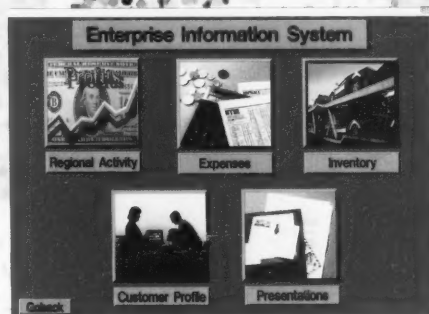
ISSUES

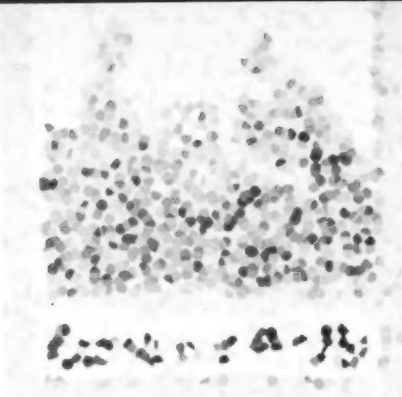
CLIENT/SERVER COMPUTING

A SPECIAL REPORT FROM SAS INSTITUTE INC.

APPLICATIONS SEGMENTATION

Matching Your Computing Resources to the Tasks at Hand





**Now you can partition
applications into discrete tasks...
then distribute each task to the
most appropriate processor**

THE SAS[®] SYSTEM

*Putting Client/Server to Work Where
It Makes the Most Sense*

Now you don't have to abandon simplicity to reap all the rewards of client/server computing. With the SAS System's remote computing services, your remote servers and local clients act as one...giving you the flexibility to match computing resources and tasks most effectively.

For example, instead of pulling large volumes of remote data into an application (an often cumbersome and expensive process), you can execute applications logic—or subsets of that logic—in the same environment where the data are stored.

And that means your servers don't just dole out data. They dole out **compute** resources as well. The combined strengths of the SAS System let you:

- Build applications that exploit the unique advantages of each hardware platform—from the friendly interfaces of a PC to the unmatched throughput of a mainframe.
- Gain transparent access to corporate data.
- Reduce data traffic over congested networks.

- Eliminate the complexity of low-level programming.
- Execute ad hoc analyses dynamically in remote environments.

More than three million users worldwide are reaping the benefits of the SAS System's proven strategies for open data access, portable applications logic, and truly distributed computing. Now it's your turn.

**Unleash All the Potential of Your Data
and Computing Assets...and Empower
the People Who Rely on Them.**

Still think of client/server in terms of a data-hungry client querying an overworked server? Think again. That's only part of the story.

Using the SAS System's array of distributed processing capabilities, there are no limitations as to where or how you put client/server to work for you.

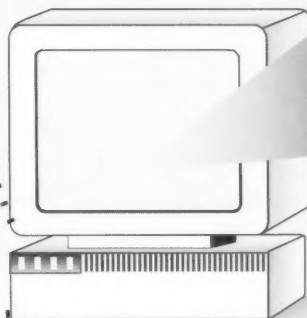
COMPETITOR
RECORDS
-COMPETITOR 1
-COMPETITOR 2



DATA
RECORDS
-REGION 2
-REGION 3
-REGION 4
-REGION 5

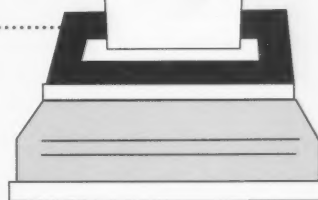
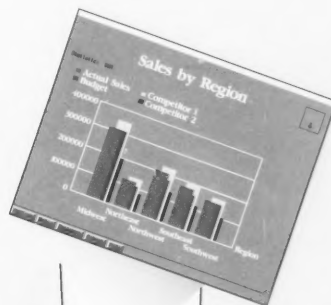
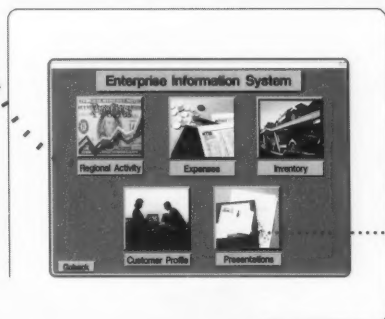
The SAS System's remote computing services work hand-in-hand with its data transfer services. Different parts of your application, no matter where they're running, can request a copy of remote data necessary to complete each task.

DATA TRANSFER SERVICES



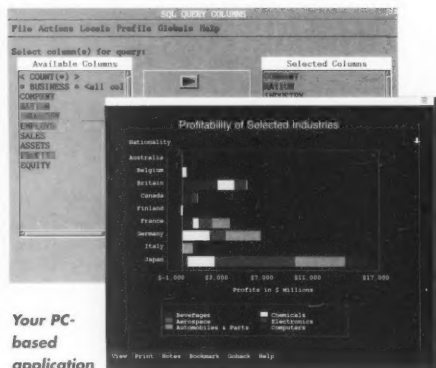
DATA
RECORDS
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REMOTE COMPUTING SERVICES



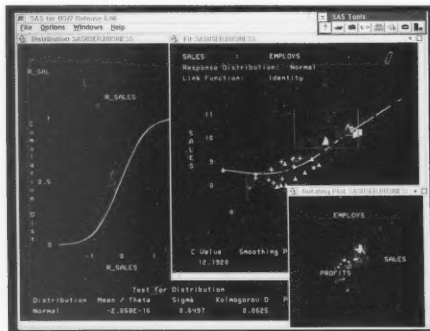
APPLICATIONS SEGMENTATION

**The Break You've Been Waiting for to
Reap All the Rewards of Client/Server**



Your PC-based application can access

data from DB2 tables on the mainframe, perform data reduction or summarization, and download the result for analysis and presentation.



Want to run reports, analyses, or graphs that require multiple passes of data? The best course of client/server action might be to move the data to your desktop. There, you can take advantage of workstation GUI features and relieve the mainframe of interactive CPU cycles.

The power of choice has come to client/server computing, and the SAS System has brought it. What else would you expect from the world's leading information delivery system?

With one software suite, you can exploit the full potential of all your hardware platforms while providing access to remote data sources too big or too frequently updated to move to your desktop.

When you choose the SAS System, you get more than just the right strategy for client/server. You get a cohesive, hardware-independent solution for enterprise-wide information delivery. More than 100 business applications are at your fingertips including tools for decision support, object-oriented applications development, project management, EIS, report writing, financial analysis, quality improvement, data visualization, and many other tasks.

And you can partition these applications any way you like...to run *where* you like.

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We've prepared a special executive white paper to acquaint you with the SAS System's approach to client/server. And our free demo shows you how to put this strategy to work in hundreds of integrated applications.

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The CW Guide to Re-engineering Tools



SALLY WEIN COMPART

REUSE IT OR LOSE IT! YOUR OLD APPLICATION'S CODE AND STRUCTURE JUST DON'T MEET BUSINESS NEEDS ANYMORE. SHOULD YOU SPEND THE TIME AND MONEY TO REDEVELOP THE SYSTEM OR SHOULD YOU JUNK IT? THE ANSWER LIES IN HOW DIFFICULT IT WILL BE TO REUSE THE APPLICATION. FORTUNATELY, THERE ARE MANY TOOLS TO HELP THE CAUSE.

Moving MOUNTAINS

Alert the programmers, change is coming! Re-development, once a dirty word in information systems, is becoming more glamorous with the advent of "re-engineering."

Before, IS organizations dealing with existing applications were content to work around the limited functionality of mainframe Cobol systems. Enhancements and new application projects were the answer to changing business requirements.

Now, business executives aren't settling for the status quo. They are demanding that IS re-engineer the application to make it more flexible and effective. This frequently requires taking the guts out of the old system and converting the system to a more

appropriate and flexible technology platform. The process is not pretty or easy, but there are a number of tools aimed at assisting in these endeavors.

Like the IS environment they try to address, the tools follow one of two courses — they provide discrete products to automate or aid in analyzing/enhancing the code or they offer a full-blown methodology and tools to re-engineer the application.

Moving these applications onto client/server platforms, migrating them to another database system or loading them into the computer-aided software engineering (CASE) mill requires shifting mountains of code and years of programmer effort. This guide gives insight into which tools are right for you and how much effort re-engineering will take.

INSIDE

LEVEL 1 **STARTING SMALL:** Tools for recoding, analyzing and enhancing your applications. *Page 106*

LEVEL 3 **SCALING CLIENT/SERVER PEAKS:** Systems that help you move legacy applications to client/server. *Page 112*

LEVEL 2 **DRIVING DATA MOLEHILLS:** Products for migrating your database to new technology. *Page 110*

LEVEL 4 **MIGRATING MEGA PROJECTS:** Reverse-engineering methods to re-engineer your systems into entirely new applications. *Page 113*

PRODUCT EVALUATIONS:

Buyers' Satisfaction Scorecard users rate KnowledgeWare, Micro Focus, SEEC and Viasoft. *Page 114*
Firing Line profiles Viasoft's Via/Alliance. *Page 115*



Starting SMALL

While many applications require major overhauls, some can be made to satisfy changing company needs through simpler projects. The advantage of enhancing rather than redoing an application is that you can improve system quality and achieve benefits quickly while strategically moving enterprise systems forward.

Such infrastructure enhancement projects can stand on their own merits or combine with other projects as part of a comprehensive redevelopment process. One example of an enhancement that impacts multiple legacy applications is changing the date and timing calculations for the year 2000. Adpac Corp.'s recently announced SystemVision Year 2000 is aimed at the century date change niche. The product automates the prechange analysis required to implement systems converted to the new century date.

However, typical small-scale projects such as language conversion, structure analysis, code splitting and code restructuring are usually aimed at improving a single system.

LEVEL

1

Analysis plays an important role in enhancing existing systems and is a key part of most projects. It is also one of the most common areas vendors target with their re-engineering product offerings.

A typical analysis tool is Intersolv, Inc.'s Maintenance Workbench, which provides a client/server environment for analyzing and reporting. Maintenance Workbench includes a

framework for incorporating PC maintenance tools.

Revolve, a tool from Burl Software Laboratories, Inc., which was recently acquired by Micro Focus, Inc., extends static analysis to include job control language navigation, execution simulation and global search and replace.

For code-quality improvements, Retrofit from Compuware Corp. converts unstructured Cobol code to structured Cobol. ViaSoft, Inc.'s Via/Renaissance assists in code splitting, which is used to break apart large applications.

Jennifer Schmidt is a free-lance writer in Hoffman Estates, Ill.

ANALYSIS, ENHANCING AND RECODING TOOLS

Vendor	Product	Description
ADPAC CORP. San Francisco, Calif. (415) 777-5400	PM/SS, System Vision Year 2000	Used to extract data attribute information; analysis tool for estimating the size of century-compliant projects.
CADRE TECHNOLOGIES, INC. Providence, R.I. (401) 351-5950	Ensemble	Helps C developers gain a quick understanding of code and automatically generate documentation.
COMPUWARE CORP. Farmington Hills, Mich. (800) 521-9353	Pathvu, Retrofit, React, Xpediter+, Datatec	Systemwide analysis, code-restructuring and interactive testing.
IBM Armonk, N.Y. (800) 860-2407	Cobol SF, Rediscovery, CCCA, WITT	Restructures Cobol code and manages the reuse of legacy applications.
INTERSOLV, INC. Rockville, Md. (800) 547-4000	Maintenance Workbench	Client/server environment for system-level analysis.
MARBLE COMPUTER, INC. Martinsburg, W. Va. (800) 252-1400	DCD III	Provides documentation and analysis of Cobol programs aimed at reducing maintenance cost.
MCCABE & ASSOCIATES, INC. Columbia, Md. (800) 638-6316	Battlemap, Codebreaker, Instrumentation, Slice	Provides understanding of code and structure. Identifies and associates modules and system architecture.
MICRO FOCUS, INC. Palo Alto, Calif. (800) 872-6265	Revolve	Provides systemwide data impact analysis along with other system- and program-level analysis features.
SEEC, INC. Pittsburgh, Pa. (412) 682-4991	Cobol Analyst	Designed for the analysis and maintenance of Cobol applications in a PC-based environment.
SOFTLAB, INC. Atlanta, Ga. (404) 246-4511	Maestro II	Tracks changes made to code by user ID and gives real-time notification to interested parties.
STERLING SOFTWARE/ KNOWLEDGEWARE, INC. Atlanta, Ga. (800) 444-8575	Legacy Workbench, Comparex	Provides tools for analyzing Cobol quality, restructuring programs and identifying business logic for reuse.
VIAISOFT, INC. Phoenix, Ariz. (800) 525-7775	Existing Systems Workbench, Renaissance	Designed to automate the process of maintaining legacy Cobol systems.

USER PROFILES

The Enhancers

When thousands of lines of Cobol are tangled together, even "small" code enhancements can cause big headaches.

Analysis and automation tools in this arena can be the right medicine, depending on the complexity of users' needs. Each program has its own strengths and limitations; for example, some emphasize working with multiprogram software systems, while others are better at drilling into the details of a single legacy program.

Franklin Life Insurance Co. in Springfield, Ill., is a case in point. The insurance company has 30 software systems consisting of 200 to 600 individual programs each. Since The Franklin was one of the first commercial enterprises to use a computer, some of the code dates back to the 1950s. That's quite a helping of mainframe spaghetti code.

Rob Richardson, an architect/planner at the insurance company, chose Burl's Revolve to perform impact analysis for design and code changes.

"Insurance systems are very interrelated," Richardson says. "Changes in one system tend to ripple through." Revolve automatically analyzes the impact a change will have systemwide and determines how long a proposed alteration will take.

The product works with many different analysis methodologies and allows programmers to perform ad hoc queries against its proprietary database. Richardson also uses the scripting language to bounce between queries and an editor, so he can perform code changes on the fly in the midst of analysis.

Richardson equates Revolve with having radar vs. flying blind. "It's the only way we can get a handle on how long changes will take. Without it, we're shooting in the dark," he says.

According to Richardson, the company chose Revolve for its broad functionality after evaluating competing products from SEEC, Inc., Adpac and Viasoft. Revolve was best for looking at relationships across multiple programs, he says.

On the other hand, Mellon Bank Corp. in Pittsburgh chose SEEC's Cobol Analyst to break

large Cobol programs into functional units.

"We have some 10,000- and 15,000-line programs; this lets me see large functional blocks of code, trace control flow logic, do structure charts" and perform other analysis tasks, says Mike Delece, systems engineer at the bank.

One of the product's strong points is its interactive nature. "Other tools, including CASE tools, don't let me interactively query a program in the same manner," Delece says.

Other benefits are the easy portability of the PC-based SEEC software and its low cost relative to full-fledged CASE tools.

THINGS YOU SHOULD ASK

ARE THE REDEVELOPMENT TARGET PROGRAMS INTERCONNECTED?

WILL NONSTANDARD DEVELOPMENT LANGUAGES MAKE AUTOMATION DIFFICULT?

HOW MUCH OF THE RECODING WILL BE DONE ON THE FLY, AND HOW MUCH WILL BE PREPLANNED?

Users must evaluate all such products carefully to find the solution that has the right amount of functionality for their needs.

Al Lilly, manager of programming at insurance concern Zurich Canada in Toronto, uses Revolve to determine the structure of third-party applications.

However, he notes several shortcomings in the products that are currently available.

"From a programmer standpoint, yes, there are adequate tools. But from an analysis standpoint, they don't really give you the big picture," he says. Users wanting to replace all or significant parts of a software system must move up to CASE-like tools.

Lilly also notes that the tools do not deal well with proprietary languages.

Derek Slater is a free-lance writer in Framingham, Mass.

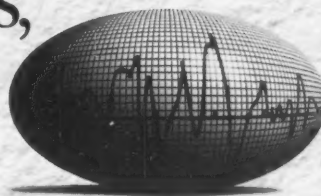
See and respond to multi-media
messages from your desktop.



How do you
take 30 orders,

fax 30 receipts,

Use voice response
to let customers
help themselves.



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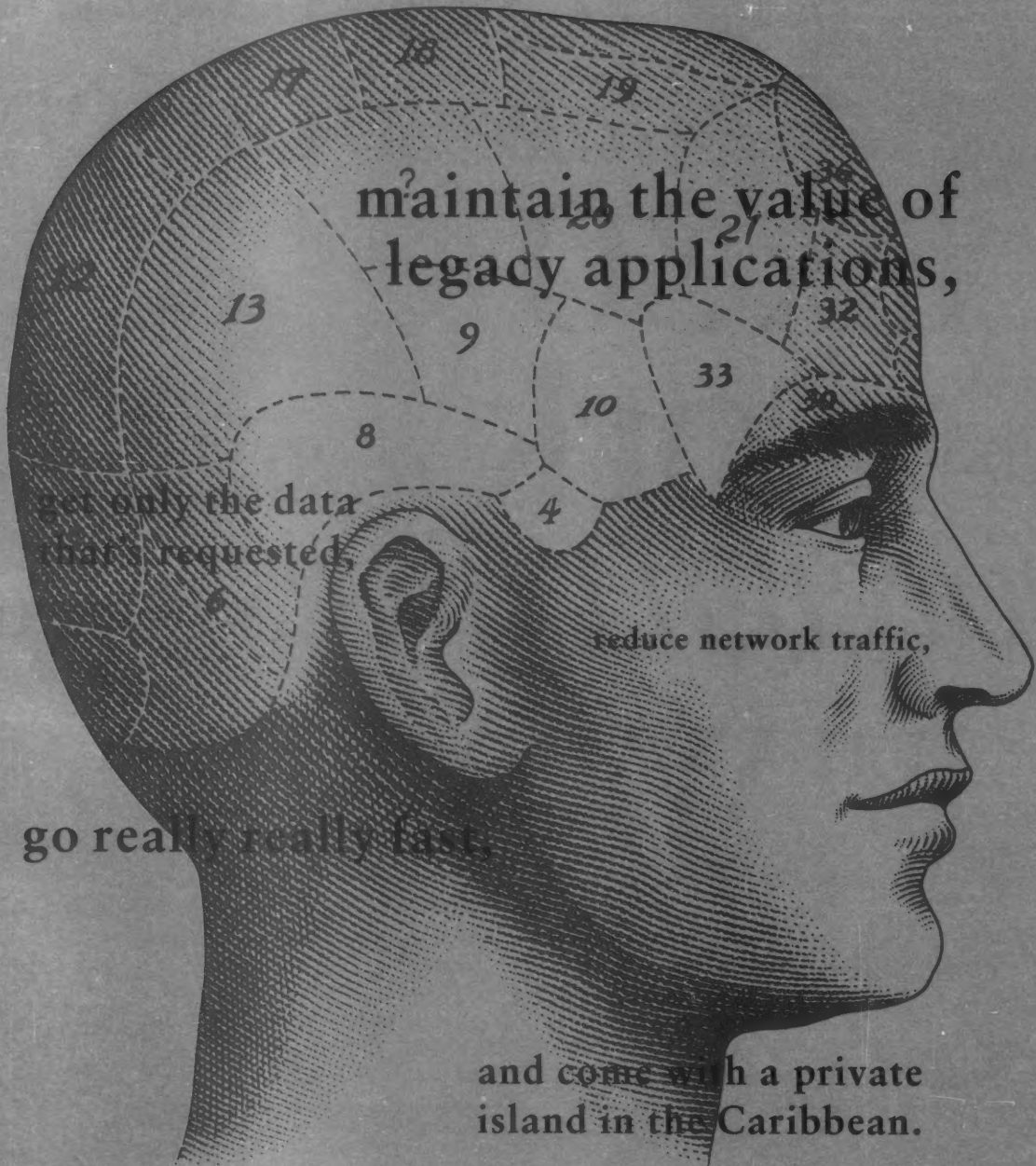
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The ultimate client/server tool
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figure 1: head

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THE METHOD IN THE MADNESS

Even though the results of various redevelopment projects are very different, there are similarities in the methods. Creating one standard framework that supports all projects injects uniformity. Some of the common redevelopment activities across various projects include enterprise goal definition, portfolio assessment/analysis and implementation.

DEFINE THE GOALS

Before initiating any large-scale redevelopment project, it is essential to have defined enterprise goals. These high-level goals precisely state the business direction. From these goals, a technical redevelopment strategy is built.

EXAMINE EXISTING SYSTEMS

This step documents the status of current systems including the environments, databases and programming languages. Through detailed analysis, the state of the infrastructure is uncovered. Further analysis reveals how reuse can be applied to minimize the time spent developing new application functions.

JUST DO IT!

If adequate planning and analysis is performed, reuse of existing applications will be as high as possible, making new development the smallest part of this phase. The emphasis of implementation is always on improving the process.

Actual project initiation is a process of choosing an appropriate set of tasks from the defined framework. One common framework used by many organizations is The Systems Redevelopment Methodology (TSRM), which is marketed by James Martin & Co. in Reston, Va., and authored by William Ulrich, president of Tactical Strategy Group, Inc. in Aptos, Calif. In TSRM, each individual redevelopment project equates to a defined business scenario.

Given a specific business scenario, tasks are grouped together and detailed steps facilitate project planning and implementation.

Driving data MOLEHILLS

Database migration could be anything from rerouting I/O statements at execution time to a comprehensive one-step database conversion. An enterprise re-engineering plan that requires a database conversion should clearly identify the short- and long-term database strategies.

A migration to a different database structure — from a network database to a relational database, for example — involves transforming data model designs. Numerous vendors supply products for different aspects of database migration projects. For example, Bachman Information Systems, Inc. offers a suite of products that automate the redesigning of database models. The tools translate the existing structures into independent data models before transforming them into the final structure.

One of the more complicated and common migrations is

LEVEL
2

the transition from a mainframe-based DBMS to a distributed DBMS on one or more servers at the center of a network. Often, analysis of the mainframe DBMS will reveal areas where the database should be segmented to create smaller versions that will fit better in the distributed environment.

Database tools can also remove data redundancies and other miscellaneous errors that have propagated throughout a database. Integrity, a data re-engineering tool from Vality Technology, Inc., automatically transforms legacy data. It uncovers misspellings, multiple fields and repetitive values.

Other products are aimed at converting the DBMS' native language to relational database technology. For example, Micro Focus' Cobol/SQL Transparency System replaces standard I/O syntax with the equivalent SQL statements.

—Jennifer Schmidt

TOOLS FOR MOVING TO A NEW DATABASE

BACHMAN INFORMATION SYSTEMS, INC. Burlington, Mass. (800) 222-4628	Bachman/Analyst, Bachman Database Design	Transforms database designs for example, from IMS to DB/2.
EVOLUTIONARY TECHNOLOGIES, INC. Austin, Texas (512) 327-6994	Extract Tool Suite	Automates data distribution.
FORECROSS CORP. San Francisco, Calif. (415) 543-1515	Convert Series	Provides the complete migration of programs, schemes, data and other components to a new database platform.
LEGENT CORP. Herndon, Va. (800) 676-5468	Legacy Data Mover XP	Manages the distribution of data to a new database platform.
MICRO FOCUS, INC. Palo Alto, Calif. (800) 872-6265	Micro Focus Cobol/SQL Transparency System	Enables applications to access relational databases using standard Cobol I/O syntax.
PRISM SOLUTIONS WAREHOUSE MANAGER, INC. Sunnyvale, Calif. (800) 995-2928	Warehouse Manager	Generates code to extract and integrate legacy data.
VALITY TECHNOLOGY, INC. Boston, Mass. (617) 338-0300	Integrity	Automates data cleanup by locating and correcting data anomalies.

USER PROFILES

The Converters



BOB TYPANSKI
MILES, INC.

Some users don't want to revamp their entire suite of applications but need important data to be more accessible. Database migration tools and data access translation software can help.

At Miles, Inc., for example, key operational applications worked fine, but users wanted more data access to help make informed decisions.

There were two hitches, says Bob Typanski, data manager at the Pittsburgh-based diversified manufacturing company.

"We were running into the typical conflict

of running queries at the same time the operational applications were running," Typanski says. All decision-support activity needed to stay clear of mainframe processing time for mission-critical applications such as order placement and fulfillment. Additionally, Miles' IBM IMS database did not hold enough historical data to make decision-support applications meaningful.

Typanski's solution was to set up a data warehouse. The company chose Prism, a tool from Prism Solutions, Inc., to help programmers map the IMS data to new database tables.

Prism is a Cobol generator that automates much of the data mapping process. In that capacity alone, Miles' programmers see a 200%

productivity boost by using the tool instead of doing all the work manually, Typanski estimates.

"Prism also helps us put descriptive business terms on some of the more technical data in the warehouse. If we just put [the data] out there but users can't find what they're looking for, we haven't accomplished much," Typanski says.

Miles' warehouse actually consists of tables located both on the mainframe and on departmental systems. Departments have the option to rent or own their decision-support data. Those who choose to own the data must purchase their own RS/6000 hardware, which the information systems team loads with Oracle Corp.'s Oracle database management system.

Other departments can simply rent space on the mainframe, where warehouse tables reside in IBM's DB2 proprietary relational database.

—Derek Slater

DATABASE DILEMMAS

DOES THE MIGRATION TOOL WORK WITH MULTIPLE SOURCE DBMSs AND TARGET DBMSs IF NECESSARY?

CAN THE TOOL INTERACT WITH CASE PRODUCTS TO AUTOMATICALLY BUILD CORRECT DATABASE STRUCTURES?

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BRANCH
ROUTERS
SENDING OUT
THE WRONG
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Scaling Client/Server PEAKS

Client/server conversions are the driving force behind many re-engineering efforts. There are a multitude of options and tools for redeveloping existing systems to client/server, and determining the best enterprise strategy depends on defining accurate business requirements. The requirements should describe the expected benefits from a client/server migration and the strategic objectives for maintaining the host systems or moving them to smaller platforms.

After defining the requirements, you can devise a technical strategy. The first step in the process is identifying the client/server configuration, which can be anything from a distributed presentation that front-ends the host system to

LEVEL 3

a setup where everything but the data management is moved from the host system.

Tools such as Via/Alliance from Viasoft, Inc. will broadly assess the impact of the changes resulting from partitioning an application between the client and server (see Firing Line, page 115). Viasoft's most recent product, Via/Renaissance, partitions programs into client and server segments.

Micro Focus offers a workbench environment that moves mainframe applications to the PC for development, testing and production. Micro Focus' Dialog System 3270 enables the developer to build graphical interfaces from a host or LAN-based CICS application without additional programming.

—Jennifer Schmidt

CLIENT/SERVER MIGRATORS

VENDOR	PRODUCT(S)	DESCRIPTION
CLIENTSOFT, INC. Tarrytown, N.Y. (800) 622-2684	ClientBuilder	Client-based application development environment used to re-engineer AS/400 and mainframe-based applications to client/server.
COGNOS CORP. Burlington, Mass. (800) 426-4667	Client/Server Ready	Product and service offering designed to migrate midrange platforms to client/server computing.
HEWLETT-PACKARD CO. Palo Alto, Calif. (800) 752-0900	Cobol Softbench	Designed to ease the migration of legacy Cobol applications to Unix.
KNOWLEDGEWARE, INC. Atlanta, Ga. (800) 444-8575	Flashpoint	Design and development tool that creates graphical interfaces for host applications.
MICRO FOCUS, INC. Palo Alto, Calif. (800) 872-6265	Micro Focus Workbench and Dialog 3270 Feature of Micro Focus Dialog System	Off-loads development, testing and production of mainframe applications and automatically front ends applications with a graphical interface.
PLATINUM TECHNOLOGY, INC. Oak Brook Terrace, Ill. (800) 442-6861	Platinum Integrator	Enables access to legacy mainframe data from a client/server environment without rewriting any application code.

How important are the following characteristics when evaluating PC-based client/server application development tools?

	CRITICAL	VERY IMPORTANT	SOMEWHAT IMPORTANT	NOT VERY IMPORTANT	NOT AT ALL IMPORTANT	MEAN*
CAN DEVELOP HIGHLY GRAPHICAL APPLICATIONS	7%	40%	36%	11%	5%	3.34
SUPPORTS MIGRATION OF LEGACY APPLICATIONS	12%	33%	37%	13%	6%	3.33
PROVIDES A TURNKEY SOLUTION	10%	26%	44%	17%	4%	3.21
USES OBJECT-ORIENTED TECHNOLOGY	6%	32%	42%	15%	6%	3.18

Source: Computerworld survey of 200 users

*Based on 1 to 5 scale where 1 is not at all important and 5 is critical

USER PROFILES

The Distributors

There is no shortage of vendors vying for a share of the users moving applications to client/server environments. Users must sort through everything from screen scrapers to middleware to find the right match.

After evaluating the market, the state of Florida's Administrative Management Information Center in Tallahassee selected CASE tools from LBMS, Inc.

Daryl Plummer, technology coordinator, says the center "had a lot of large-scale systems to collect operational data, but you couldn't get anything out." The majority of the systems were at least 5 years old, Cobol-based and devoid of any graphical interfaces, and managerial information was nearly impossible to extract, according to Plummer.

As the move to client/server applications got under way, different departments selected a broad range of development tools, including C++, Powersoft Corp.'s PowerBuilder and Oracle Corp.'s database and tools. Plummer's job was to consolidate and standardize the development effort. The center chose LBMS's Process Engineer and Systems Engineer products as the backbone for the project in large part because they could interoperate with tools already in place.

Plummer says the center also considered or tested CASE tools from Texas Instruments, Inc., KnowledgeWare, Inc. and Software AG of North America, Inc. TI lacked the flexibility to interface with some of the other development tools, while KnowledgeWare worked only under OS/2 — an unwanted restriction. "All our people who had used these other CASE tools unanimously said this stuff doesn't work" for the center's needs, Plummer says.

Plummer acknowledges the center required significant up-front investment to use client/server migration products. "It's an enormous undertaking — retraining everyone to the LBMS methods and so on," he says. The development project is being conducted in stages that deliver value to the users in both the short and long term.

Because of that training investment, us-

ers should evaluate their work load carefully.

Kaiser Permanente Healthcare went a different route, selecting ClientBuilder from ClientSoft, Inc. to connect PC and Macintosh clients to mainframe data. The health maintenance organization's primary need was not system-level application analysis. Instead, the biggest burden on the programming staff was in writing high-level language application programming interface communications code for each graphical user interface screen. Alan Wang, a technical specialist, says a single screen previously

CLIENT SERVICES

HOW MUCH TRAINING IS REQUIRED FOR PROGRAMMERS?

CAN THE TOOL WORK WITH ALL NECESSARY COMMUNICATIONS PROTOCOLS?

WILL USERS BE ABLE TO ADD NEW CLIENT PLATFORMS IF DESIRED?

required 40 to 80 hours of programming time. This was reduced to about five minutes using the screen-scraping capability of ClientBuilder.

A few companies will find that automating requires more effort than recoding by hand.

At pharmaceutical company Upjohn Co. in Kalamazoo, Mich., an overburdened IBM 3090 mainframe forced the company to re-host its SAS Institute, Inc. statistical analysis application for evaluating clinical trial results. SAS software also runs on PCs but has certain platform-specific options. Fortunately, Joe Wang, information scientist at the company, says the original developers consolidated all platform-specific code into one program.

"We just modified the [mainframe-specific] commands to corresponding Unix commands. It would have taken longer to automate it than to do them by hand," Wang says.

—Derek Slater

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- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr., IPC Mgr., Tech. Planning, Admin Sys.
- 23. Dir./Mgr. Sys. Development, Sys. Architecture
- 31. Programming Management, Software Developers
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- 13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

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- 70. Medical, Legal, Accounting Mgt.
- OTHER PROFESSIONAL MANAGEMENT
- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

- Operating Systems
 - (a) Solaris (e) Mac OS
 - (b) Netware (f) Windows NT
 - (c) OS/2 (g) Windows
 - (d) Unix (h) NeXTstep
- App. Development Products ☐ Yes ☐ No
- Networking Products ☐ Yes ☐ No

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 - (c) OS/2 (g) Windows
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- App. Development Products ☐ Yes ☐ No
- Networking Products ☐ Yes ☐ No

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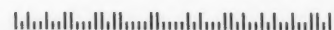
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Migrating Mega PROJECTS

Reverse-engineering is the most extensive way to deal with existing applications. While the idea of transforming old technology into new is attractive, the complexity of the process has prohibited many companies and vendors from implementing it.

James Martin & Co. defines this category as the "use of tools and techniques to facilitate analysis, improvement, redesign and reuse of existing software to support changing business and technical requirements." Given that business changes can take many forms and technical projects can range from client/server to distributed systems, the effort required can be quite daunting.

A common way to arrange the process is to use analysis

LEVEL
4

and redesign tools to place the relevant data and business rules of an application into a repository. The repository will translate the application information into a form that CASE tools can access to redeploy the applications.

Most CASE vendors offer specific reverse-engineering tools that transfer the necessary information from the application and place it in the repository. KnowledgeWare, Inc.'s NorthStar is one example. NorthStar captures the procedures, routines and data of existing systems. The recovered design model is then brought directly into KnowledgeWare's CASE tool, the Application Development Workbench, for new development.

—Jennifer Schmidt

HOW IT WORKS

An example of the redevelopment process



EXISTING SYSTEM



PREPARE AND ANALYZE SOURCE



BUILD AND STANDARDIZE CENTRAL DATA DICTIONARY



REVERSE-ENGINEER PROGRAMS, MAPS, ETC.



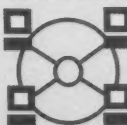
SPECIFICATIONS REPOSITORY



GENERATE NEW SOURCE

A legacy application is first analyzed and examined to discover code structure and business rules. Using this structure, developers create a data dictionary and use reverse-engineering tools to normalize and integrate the application with the repository.

NEW APPLICATION



The repository is central to CASE reverse-engineering for many vendors because it stores and manages application specifications for later use by other application development tools.

Source: Vendor background material

REVERSE-ENGINEERING TOOLS

VENDOR	PRODUCT(S)	DESCRIPTION
CGI SYSTEMS, INC. Berwyn, Pa. (800) 366-3244	Pac Reverse	Extracts the data model, rationalizes it and puts the data descriptions into the PacBase repository.
INTERSOLV, INC. Rockville, Md. (800) 547-7000	Design Recovery for Windows	Analyzes Cobol applications and produces design information that may be used and modified with Intersolv's Excelerator for Windows.
STERLING SOFTWARE/ KNOWLEDGEWARE, INC. Atlanta, Ga. (800) 444-8575	NorthStar	Leverages investment in systems by allowing the capture of procedures, routines and data.
LBMS, INC. Houston, Texas (800) 231-7515	Systems Engineer, Process Engineer	Provides GUI modeling facilities, server design and generation capabilities and interactive process management.
SEER TECHNOLOGIES, INC. Cary, N.C. (919) 380-5000	Fast Forward	Translates legacy systems by extracting process and data definitions into their HPS client/server development environment for redeployment in client/server.
TEXAS INSTRUMENTS, INC./PRICE WATERHOUSE (800) 336-5236	Current Systems Analysis, Current Systems Modification, Encyclopedia Import Facility	Tool sets allow organizations to redesign mainframe systems and add network access.

USER PROFILES

The Rebuilders

Reverse-engineering and CASE-based re-engineering are by no means magic wands that turn frogs into princes. But for certain users, these tools do provide the power to move applications to new platforms and functionality.

The Puget Sound Naval Shipyard, the largest of seven U.S. Navy shipyards nationwide, is moving all computing from proprietary mainframes to a network of distributed Unix systems.

However, with more than a million lines of Cobol code in its ordering, tracking and inventory applications, the shipyard would find re-engineering by hand "beyond the scope of our careers," says Bill Hamlin, computer specialist and CASE administrator there.

Hamlin enlisted vendor CGI Systems, Inc. with its PacReverse product to get the applications into a repository. This plan will allow the shipyard to move to any target platform without recoding the business logic repeatedly.

RE-ENGINEERING REVIEW

WHICH APPLICATIONS ARE SUITABLE FOR REVERSE-ENGINEERING?

IS THE REDEVELOPMENT WORK LOAD WORTH INVESTING THE NECESSARY TRAINING?

WHICH PARTS OF THE REVERSE-ENGINEERED APPLICATIONS STILL MATCH CURRENT BUSINESS REQUIREMENTS?

Hamlin chose a turnkey reverse-engineering solution, with CGI doing the actual reverse-engineering work rather than training the shipyard's information systems personnel with the tools. "The tool won't do us any good after we finish this project, so why spend a lot of time learning it?" he says.

Not every application is a candidate for reverse-engineering, users say.

The Shelby County Government in Memphis, Tenn., is using PacReverse to migrate from Bull HN Information Systems, Inc. minicomputers to Tandem Computers, Inc. systems and PC networks. The project involves a great deal of redevelopment, according to Mike Pachis, development center manager. But only very stable programs that still closely match the county government's business needs were chosen for reverse-engineering.

CASE products provide relatively little help in the analysis of business rules, Pachis says. "I can't see any tool replacing human beings in that," he says.

—Derek Slater

BUYERS' SCORECARD: Legacy analysis tools leave something to be desired



Users of Cobol analysis tools face a dilemma: The software is fairly easy to use and highly effective when applied to the right job in the right environment. But figuring out where the tools fit and getting them to match an application's unique attributes is very difficult.

"In the past, tool vendors have introduced more and more products into the market without paying much attention to educating users about what to do with them," says Bob Carlston, a principal consultant at James Martin & Co.

Although the vendors have taken steps to address this issue, the generally low ratings in the Buyers' Satisfaction Scorecard on legacy application redevelopment tools can be attributed to this lack of education.

"Users look for the tools to supply the methodology, and when they don't, the tools become shelfware — ending up on the shelf because they don't match the business circumstances," says Bruce Whitman, vice president of Trecom, Inc., a redevelopment systems integrator.

Viasoft, Inc. in particular has been more apt to provide tools without teaching users how to fit them in, according to Carlston. But within the last year or so, the company has worked hard to develop a structure and methodology so users know where and how to use the components of its Existing System Workbench (ESW).

It has tough competition in the form of KnowledgeWare, Inc.'s Legacy System Workbench (LSW), which is closely tied to the computer-aided software engineering vendor's Information Engineering methodology. Seventy percent of the 50 KnowledgeWare users surveyed use LSW as part of a project to create a formal model for development. Only 21% of the 24 Viasoft users are creating a model; 74% are focused on inventory, analysis and code improvement.

KnowledgeWare too has taken steps to strengthen its appeal in the past few years. First, it acquired Language Technology International's Cobol fixing tools. Then, to bolster its financial backing, it was acquired by Sterling Software, Inc. [CW, Aug. 9].

Another problem that plagues the tool vendors across the board is limited support for other platforms. "They all primarily support plain vanilla IBM mainframe Cobol applications," Carlston says.

One user said, "We're using different languages and certain flavors of Cobol, and we had to design new features so that the tool fit our environment."

ESW and LSW are expensive mainframe-based packages that offer a set of tools for analyzing and fixing Cobol code as well as prepping the application for redevelopment by other tools from the vendors.

HOW WE DID THIS SURVEY

Computerworld contracted with First Market Research in Austin, Texas, to collect random samples of users of legacy application redevelopment tools aimed primarily at inventory and analysis. Included in the sample were the following vendors: Adpac Corp., Sterling Software/KnowledgeWare, Inc., Compuware Corp., Viasoft, Inc., SEEC, Inc., Micro Focus, Inc./Burl Software Laboratories, Inc., Softlab, Inc., and Intersolv, Inc.

Response bases were: 50 users for Sterling Software/KnowledgeWare and Micro Focus/Burl; 41 for SEEC; and 25 for Viasoft. All other product sets received less than 20 responses. Random lists of users were supplied by the vendors and the Computerworld Database Division.

For further information, contact Michael Sullivan-Trainor at (800) 343-6474 ext. 229 or mstrainor@cw.com.

HOW THE MARKET LEADERS FARED

All ratings are based on a 1-to-10 scale, where 10 is best. Ratings are weighted by how important they are to the users surveyed. Overall score is the average of the ratings for each category.

CATEGORIES
Listed in order of importance

RELIABILITY

EASE OF USE

PERFORMANCE

TECHNICAL SUPPORT

VALUE

INVENTORY AND ANALYSIS

PLATFORM SUPPORT

INSTALLATION/CUSTOMIZATION

MAINFRAME-BASED

OVERALL SCORE

STERLING/
KNOWLEDGEWARE'S
LEGACY SYSTEM
WORKBENCH
(RESPONSE BASE: 50)

6.0

7.6

6.3

6.4

6.0

5.7

5.7

5.1

5.4

OVERALL SCORE*

VIAISOFT'S
EXISTING SYSTEMS
WORKBENCH
(RESPONSE BASE: 25)

6.3

8.1

6.7

6.4

5.8

6.2

6.4

5.0

5.9

PC-BASED

OVERALL SCORE

MICRO FOCUS/
BURL'S
REVOLVE
(RESPONSE BASE: 52)

6.1

7.5

6.3

6.4

6.0

6.0

6.0

5.5

5.5

OVERALL SCORE*

SEEC'S
COBOL ANALYST
(RESPONSE BASE: 41)

6.5

8.4

7.5

6.7

6.0

6.4

6.6

4.8

5.8

Adapting the tools to new environments requires designing new features

Product works primarily with standard mainframe Cobol only

WHAT'S IMPORTANT TO USERS OF LEGACY APPLICATION REDEVELOPMENT TOOLS?

Ranking is in order of importance to 200 users surveyed

1. RELIABILITY
2. EASE OF USE
3. PERFORMANCE
4. TECHNICAL SUPPORT
5. VALUE
 - Cost
 - Value
6. INVENTORY AND ANALYSIS
 - Inventory capability
 - Analysis capability
7. PLATFORM SUPPORT
 - Supporting multiple platforms
 - Flexibility
8. INSTALLATION AND CUSTOMIZATION
 - Ease of installation
 - Ease of customization

Burl Software Laboratories, Inc. (which was recently acquired by Micro Focus, Inc.) and SEEC, Inc. provide PC-based tools aimed at specific targets. For example, Burl's Revolve is aimed at cross-referencing Cobol applications and structures, and SEEC's Cobol Analyst is aimed at examining and analyzing the code itself.

More than 40% of the 50 users of Burl and 41 users of SEEC products are focused on code improvement and programming language changes.

To broaden its user base without moving into other product lines, SEEC has a joint marketing agreement with Viasoft. The SEEC product is sold under the ESW-PC name.

Ratings in reliability, performance and ease of use indicate the strong sides of the tools — once users get to work with them. The value of using them to enhance applications can be observed in a study by Capers Jones, chairman of Software Productivity Research, Inc. in Burlington, Mass.

Jones' model for a large enterprise's application portfolio showed that the overall complexity of the applications is reduced, but restructuring and enhancing increases the size of the applications.

With more than 1.8 million software programmers in the U.S., and about 900,000 of them dedicated to modifying and enhancing existing software, there is ample room for robust redevelopment tools, according to Jones.

Written by Michael L. Sullivan-Trainor, Computerworld's senior editor, CW Guide.

FIRING LINE: Viasoft's Via/Alliance provides a road map to legacy Cobol code but requires its sister products to perform redevelopment

Very few tools assist developers in mapping out the countless lines of usable code left on their legacy systems. But a new product from one of the leaders in the redevelopment tools market will help those who need to decipher Cobol and MVS code. That tool, Via/Alliance, is the newest module in Viasoft, Inc.'s Existing System Workbench.

Via/Alliance enables developers to inventory and perform impact analysis of source code and job control language (JCL), letting companies see what reusable code they have and how the code affects their other applications. Via/Alliance also allows developers to track applications by exporting information to a DB2 database.

The evaluators for this survey included an aerospace company, a county government and a financial firm.

The survey was developed with assistance from Howard Rubin and Associates and Technology Investment Strategies Corp. Tony Picardi, director of software research at International Data Corp. in Framingham, Mass., contributed to this evaluation.

EASE OF INSTALLATION

Evaluators described an easy installation process that improved with each subsequent beta release.

Finance company: "Installing the latest version of Via/Alliance was very easy. Earlier beta versions required several manual adjustments to work properly, which have since been fixed."

Government: "It took some time figuring out the parameters for when we had to install the Via/Alliance's central library, but other than that it went fine."

INVENTORY OF CODE

Once done manually by wading through volumes of documentation, Via/Alliance inventories an application's code, then provides a road map showing how it impacts other applications. But even though Via/Alliance has brought automation to this process, at least one evaluator desires a higher level.

Aerospace company: "It's still a manual process to define all the components of an application. Ideally, I would like to be able to give the JCL name and have Via/Alliance automatically grab all its as-

sociated libraries and components."

SEARCHING CAPABILITIES

Highlighting specific data elements and showing how they are used within a program while excluding unwanted elements is the heart of Via/Alliance. Users said they were more than satisfied with its ability to break down code but complained that the queries delivered unwanted data.

Finance company: "If the system says Data element 1 is associated to Data element 2, it assumes it is also associated with the other data elements that have a relationship with Data element 2. What happens is you end up getting more data than you want."

REPORTING CAPABILITIES

Evaluators said Via/Alliance generates invaluable information, especially for those who might have limited documentation for their older systems. But its data reports, especially its impact analysis report, were said to include unwanted data elements associated with the target data, making for a cumbersome and hard-to-read report.

Government: "Via/Alliance's impact analysis report can be lengthy and difficult to read. It tends to string out the information when identifying all the groups a data element is related to. If they could bring some graphical representation to this, it would be much easier to understand."

Finance company: "Once the data elements that meet my search are identified, it puts them into a report that can then be read by Viasoft's Via/Insight. Via/Insight complements Via/Alliance by actually locating the data elements and code in the working storage sections of all the applications analyzed with Alliance."

Aerospace company: "It's really difficult to wade through all the extra data that gets included in the impact analysis report, although the report becomes easy to read once imported to Via/Insight."

SUPPORT

Each evaluator used a beta release. All evaluators experienced bugs in the program but remarked

VIA/ALLIANCE

VIAISOFT, INC.

Phoenix, Ariz. (602) 952-0050

Ratings are based on user expectations on a 1-to-5 scale, where 1 is below expectation and 5 is above expectations

3.9	TOTAL SCORE
3.7	EASE OF INSTALLATION
3.7	INVENTORY OF CODE
4.0	EXAMINATION OF SOURCE CODE
3.6	EXAMINATION OF JOB CONTROL LANGUAGE
4.0	SEARCHING CAPABILITIES
4.0	REPORTING CAPABILITIES
4.7	SUPPORT
3.3	VALUE FOR THE DOLLAR

Solid ability to break down code but more refinements are needed

Value depends on size of problem. Users say \$45,000 price tag is worth it.

VIASOFT RESPONDS

QUERIES: Our initial design did not consider the extent of the data element relationships users needed. Therefore, all possible groupings and relationships were reported. The General Availability product scheduled for a Sept. 30 release has been modified to provide accuracy with less "noise," so users can get to the information quicker.

IMPACT ANALYSIS REPORT: We have added a summary report to assist users in reading their

lengthy impact analysis reports. We have also added some additional information filters to reduce the volume of information in the report.

AUTOMATION: While there is some automation for defining applications and their boundaries, it remains a tedious task for those with older, complex systems. The automation provided has some intelligence, however, there is room for improvements, some of which are already in the planning stages.

ALL IN THE FAMILY

Products in Viasoft's Existing System Workbench suite:

♦ **VIA/ALLIANCE**
Application change and impact analysis

♦ **VIA/RECAP**
Inventory and analysis

♦ **VIA/INSIGHT**
Understanding the application

♦ **VIA/SMART EDIT**
Program editing

♦ **VIA/SMART TEST**
Code testing

♦ **VIA/RENAISSANCE**
Code slicing and identifying modules

♦ **VIA/SMART DOC**
Documentation

favorably on how fast Viasoft fixed them.

Government: "They faxed a lot of fixes for us on the fly—all of which were incorporated in the next release."

VALUE FOR THE DOLLAR

Because each evaluator was a beta tester for Viasoft, all received the product at a discounted price. But evaluators said they would not complain if they had paid the full \$45,000, now that they know the product's capabilities.

Government: "I think the value depends on how big your systems are. If you have medium-size to large systems that are poorly documented, it's well worth the money. Especially now that we are coming up on the year 2000 when all the system clocks will need to be changed."

Written by Kevin Burden, Computerworld senior researcher, CW Guide.

Computerworld's Firing Line is an evaluation based on interviews with major users at corporate and educational installations. The product under evaluation is being used in live application environments.

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In Depth

The rap on RE-

SOUND OFF!

AT ISSUE: There's no doubt that the management practice designed to dramatically improve business performance is falling out of fashion, but is it really a dangerous idea? A senior manager at Nolan, Norton says the bad rap on re-engineering is unjustified. His opponent argues that the very concept is violent — that the managerial fad destroys sound businesses.



BY
BRIAN
REYNOLDS

many organizations can alter the way they work rapidly enough to keep up with today's changing business environment.

Don't get me wrong. Like any other tool, this practice is dangerous when misused.

Part of the confusion stems from the lack of a common definition. At its most fundamental level, re-engineering (also known as business process re-engineering or process redesign) seeks to dramatically improve business performance by redesigning processes — strings of activity that stretch across traditional departmental or functional lines. Historically, these processes have been suboptimized to the point where many barely work.

In some cases, re-engineering entails creating new processes where none existed. In all cases, the redesign of the business process should coordinate cross-functional workflow, information technology, people and organization, policy and regulation and physical infrastructure. Its purpose is to deliver value to the organization's customers.

It's useful to think of the process as a large mallet. If you strike the mallet on a piece of your business, more than likely its shape will change — although the object may be obliterated on impact. Admittedly, that sounds ominous, but the ability to induce rapid organizational change is one reason re-

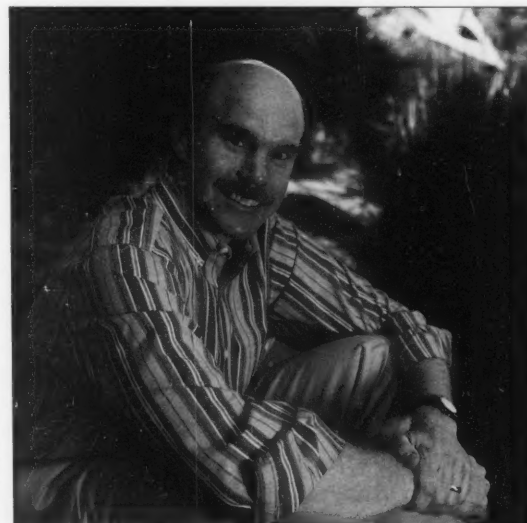
e-engineering has been getting a bad rap lately. Like nuclear power, miracle drugs and mutual funds, it's fallen out of fashion. Once hailed as the miracle cure for business, it is now "the thing that never works." Apocalyptic tales about how this organization re-engineered itself out of business and how that ruthless mogul put thousands of people out of work abound.

Bad press aside, I argue that re-engineering is absolutely, positively the only method by which

ngineering will survive all the negative press.

This type of industrial-strength change won't come from incremental, departmental improvements. Take the case of a manufacturing order that is handled by customer service, design and pro-

duction control. Traditional approaches improve what each department does on its own. A re-engineering solution changes the structure of the process across functions, ignoring the constraints of the current organization.



BRIAN REYNOLDS: It's the only way to keep up with today's business environment

ENGINEERING

Thus, design staff may be moved to customer service so some designs can be worked out with customers over the phone. High-volume customers may be given access to the design department's computer-aided design system so they can electronically review designs.

Done well, a re-engineering solution ensures customers get what they want and the company keeps their business. My example illustrates that re-engineering is not a synonym for massive layoffs. It requires thinking strategically about how the business should operate — now and in the future. Its success depends on many factors. Elements that I consider important include the following:

- Re-engineering must be directed from the top of the business organization not from the IS department. The executive responsible for the business process must be intellectually and physically involved in the effort.
- Re-engineering efforts must focus on the common goal of dramatically improving cross-functional processes that deliver value to customers. Results must be measured in ways that are meaningful to the organization and its customers.
- Information technology organizations must position themselves as enablers and facilitators. Re-engineering offers an opportunity to implement technology that makes the business work dramatically better. It is critical that the information technology organization be ready to support that.
- Cultural change is critical and must be managed. One of the biggest issues organizations are finally dealing with is the need to change some aspect of the culture to make the new process and supporting technology work. Traditional IS projects can't touch this issue.

Reynolds, page 121



BY
PAUL A.
STRASSMANN

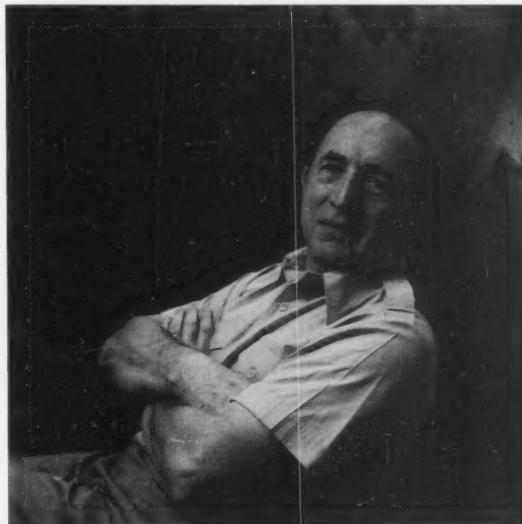
e-engineering, like democracy, religion and marriage, is theoretically a sensible and rational concept. But like every great idea promoted as a solution to the ills that ail, it has the potential to serve the opposite purpose. That's precisely what has happened with re-engineering. The latest managerial fad has become characterized by two trends so disturbing that they are inhibiting the progress of the very business they were designed to improve.

The first trend is violence. The second is something I call "blank canvas" thinking. Both are virulent strains — mutations of otherwise sound methods that analysts have been practicing for at least 80 years. My purpose here is to offer an inoculation against them.

Making a categorical case for violence, in support of re-engineering, has earned its most vocal proponent, Michael Hammer, the title of guru. His assertions include:

- "... On this journey ... we shoot the dissenters." (*Forbes ASAP*, Summer 1993)
- "What you do with the existing structure is nuke it!" ("Mike Hammer, The High Priest," *Site Selection*, February 1993)
- "... re-engineering must be initiated ... by someone who has enough status to break legs." (R. M. Randall, "The Reengineer," *Planning Review*, May/June 1993)

I contend that executives cannot subscribe to such ferocious views and simultaneously preach the values long associated with the American school of organizational thinking: individual empowerment, teamwork, partnership, participative management, knowledge-driven enterprise, learning corporation, employee gain sharing, fellow-worker trust, common bond, shared values, people-oriented leadership, cooperation and long-term career commitment. It's no wonder then that a recent survey of senior managers found the No. 1 most difficult aspect of re-engineering is "dealing with fear and



PAUL A. STRASSMANN: How can re-engineers subscribe to such ferocious views?

anxiety throughout the organization" (CSC Index, Inc. survey of 600 senior managers from large U.S. and European corporations).

Recent advertisements from Arthur Andersen in *The Wall Street Journal*, *Fortune* and *Forbes* proclaim: "You are committed to dra-

matically changing your company. You have gone back to the blank canvas." The ad shows an executive standing in front of a blank frame, scratching his head. It declares: "... our professionals will start by sharing... what works Strassmann, page 121

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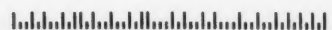
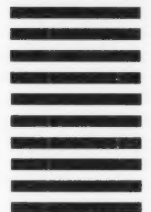
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In Depth: The Rap on Re-engineering

REYNOLDS, continued from page 119



the things that can go wrong and coun-

No doubt my arguments won't satisfy all the nay-sayers. But in some ways, I hope the skeptics persevere. Through their cautionary tales, they help educate people on the things that can go wrong and coun-

teract those who portray re-engineering as the cure for whatever ails organizations. Re-engineering practitioners must combine this evangelical vision with practical reality, using the vision to whip up the crowd, generate sponsorship and give those in the trenches the courage to suggest changes their bosses might not like. Then, guidance and advice should be

SOUND OFF!

provided so people know what to expect of re-engineering and have the tools to make it work.

Reynolds is a senior manager at Nolan, Norton & Co., an information technology consultancy based in Boston. He was one of the key designers of the re-engineering methodology used by Nolan, Norton's parent company, KPMG Peat Marwick.

STRASSMANN, continued from page 119



best for others." In other words, the consultants offer a template to deal with the unknown future.

The ideology of discarding what you know and entrusting yourself

to the guidance of totally new sources offers the perfect justification to dispense with the services of people your business has employed. The idea of purging your people because their accumulated experience does not matter, draws much of its appeal from the following:

• "Business re-engineering means starting all over, starting from scratch." It means forgetting how work was done.... Old titles and old organizational arrangements cease to matter. How people and companies did things yesterday doesn't matter to the business re-engineer." (Michael Hammer and James Champy, "Reengineering the Corporation, A Manifesto for Business Revolution," Harper Business, 1993)

My position is that you can never totally disregard your people, your relationships with customers, your assets, the accumulated knowledge, your legacy software and your reputation. You will find versions of the phrase "throw history in the dustbin and start anew" associated with every failed radical movement in the past 200 years.

Re-engineering proponents do not worry much about formal methods of finding out how the business is working right now and what ails it. Instead, adherents of the violent, blank canvas school of thinking resort to techniques of emergency surgery, most often by amputation, or they resort to tourniquet-like remedies to stop the flow of red ink.

I acknowledge that radical re-engineering is necessary under conditions of imminent danger. But those who implement it must realize this may leave an enterprise in a crippled condition. Some of the more drastic cures leave patients too demoralized to fully recover. No wonder the simple and quick methods are preferred by the impatient and those who may not be around to cope with the unforeseen long-term consequences.

In the most radical forms of re-engineering, participation by most of the existing management is superfluous because the new regime intends to junk the old methods anyway.

How do you achieve business process improvements under such adverse conditions? How do you motivate your people to give you their best efforts so they may prosper again?

Business process improvement depends most heavily on the commitment, imaginative cooperation and accumulated knowledge of employees. By that definition, re-engineering is OK with me. ■

Strassmann is a longtime chief information systems executive in New Canaan, Conn. Portions of this essay appeared in *The Politics of Information Management* (1994, The Information Economics Press). Reprinted with permission.

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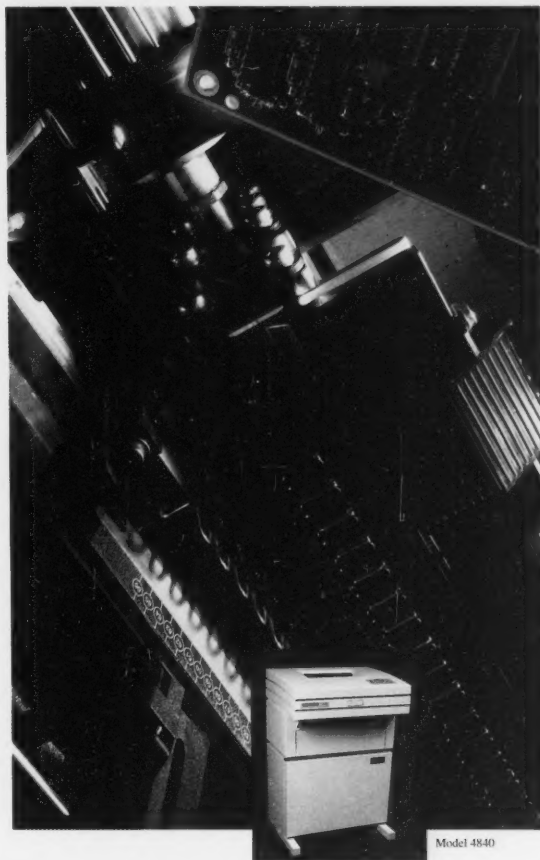
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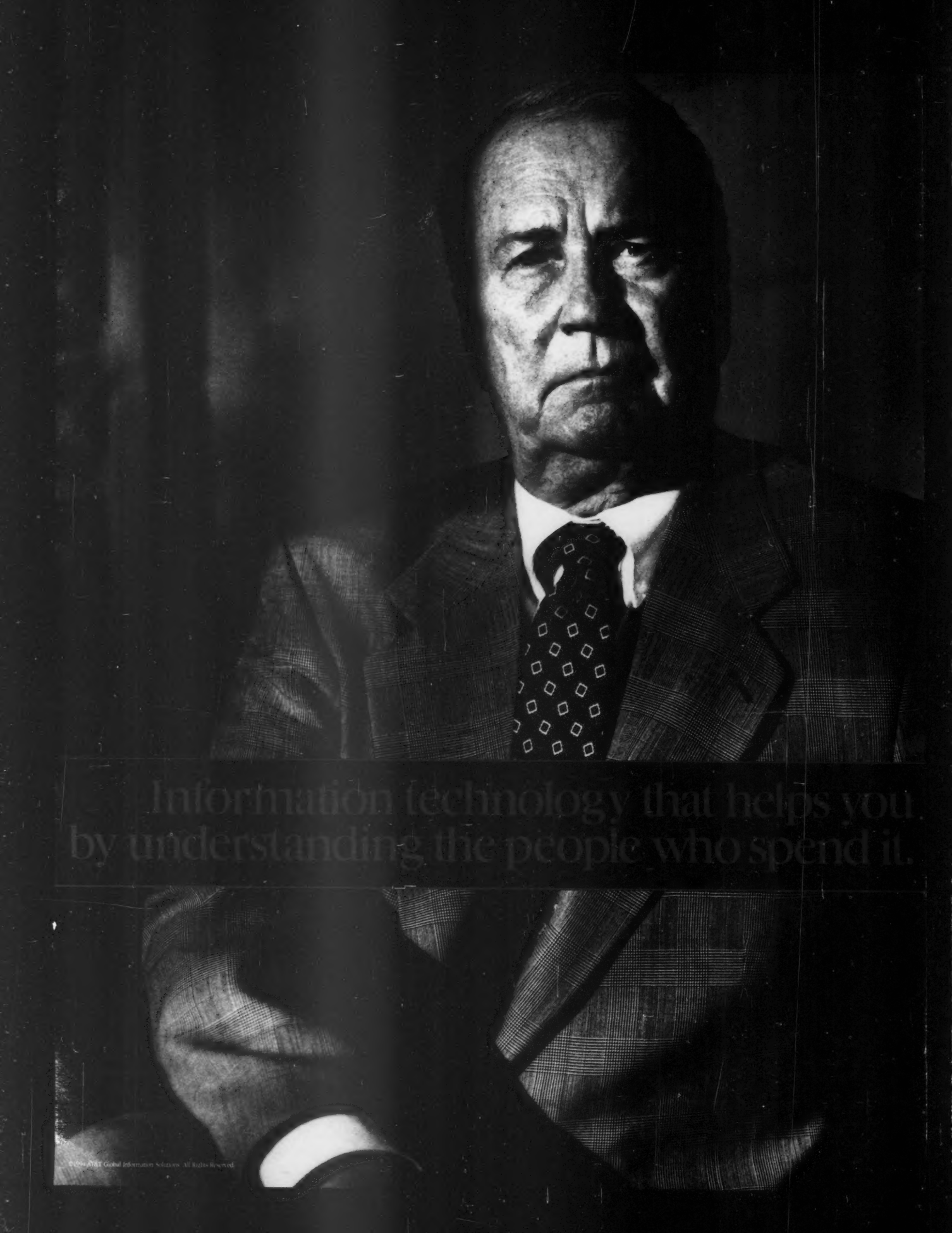
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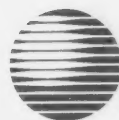
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By Leslie Goff

During the past few years, Pollizzl has pulled together a team to develop an object-oriented graphical user interface (GUI) to the Hubble Space Telescope data archives. He now faces

It was important that the person [was familiar] with one or more object methodologies. They had to have practical experience

Two senior people went to specific training in object-oriented analysis and de-

For now, we'll stick with the four remaining team members, but soon we'll have to replace one. The required skills mix has also changed. For instance, we no longer need explicit database expertise because that has been transformed into a new capability that is shared by other teams. Each team member now has C++ and object-oriented skills, so we don't need a methodology expert. We will be looking for another good user interface designer, however.

Goff is a free-lance writer in New York.

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Computer Careers

On the road again

By Alan Radding

Mobile users may be screaming for more support, but few companies are answering the call with dedicated information systems staff.

"Mobile users have different equipment and different communications, but they are usually just passed along to the same help desk," says Cheryl Currid, president of Currid & Co. in Houston.

In fact, most organizations take the approach of Spalding Sports Worldwide in Chicopee, Mass. "There are some extra steps involved, but we support mobile users the same way we support internal users," says Bard White, chief information officer at Spalding.

Solutions aren't simple

Even so, from the IS end, supporting mobile users is difficult. Typically, they need support outside normal business hours and have a telecommunications dimension local users don't have.

But while it's easy to trivialize the problems encountered, mobile users are stymied without a fast solution. For example, Spalding users dial in via Telnet, using a different local phone number in each town. The phone numbers are provided in a booklet the company hands out, but "they may lose the book or not have it with them, so they call us for the telephone number," White says.

Even though you can't build a career exclusively around supporting mobile users, it couldn't hurt to learn a thing or two about remote computing

IS can automate as much of the process in advance as possible, but things still crop up that they can't anticipate. For example, IS can write a script to automate dialing in from a hotel room. "Everything works fine until the person gets to a hotel where he needs to dial an 8 rather than a 9 to get an outside line," Currid says. The script suddenly doesn't

work, and the user doesn't know what to do next.

Once mobile users are connected to the corporate LAN, more problems arise because of differences between local and remote connections. For instance, users often don't like the different response between, say, a 9.6K byte/sec. dial-up connection and the direct high-speed network connection they enjoy at headquarters.

User errors

"Users are used to in-house response time, so they get impatient and start hitting the Enter key and typing ahead," says Dan Roy, information center coordinator at Guardian Insurance Co. of Canada in Mississauga. Needless to say, the extra keystrokes mess things up and make it difficult to figure out exactly what happened. Guardian supports its mobile users through its regular help desk.

Training can reduce much of the support burden. "Initially, mobile users need more support. But after training, they don't take up any more of our time than any other users," says Michael McClure, network administrator at ICM Pharmaceutical, Inc. in Costa Mesa, Calif.

McClure supports about 250 users, 60 of whom are mobile. Spalding also trains mobile users to orient them with the challenges of mobile computing.

So what does this mean for the techie who wants to build a career exclusively around mobile user support? It won't

happen, except possibly at those few organizations that support hundreds or thousands of active mobile users. As mobile computing becomes more commonplace and the technology more bullet-proof, mobile users will increasingly become more like local users in terms of their support needs.

In the meantime, however, mobile computing is on a growth track. And for the next few years at least, "there is a short-term opportunity for IS people who un-

Subsidized support

If you want to add support for mobile users to your skill set, you must be familiar with the following areas:

Telecommunications

Get to know the various dial-up and wireless telecommunications options and procedures. Also, become familiar with the common private branch exchanges (PBX) and digital PBX lines your users may encounter.

Hardware

Laptop and notebook computers and peripherals fail more frequently than desktop systems because of rough handling. You must understand and troubleshoot hardware problems over the phone and know how to get hardware fixed on the road.

Software

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PROGRAMMER/ANALYST needed by a southwest Ohio company to develop image processing systems for use in electronic engraving system for different image sources, such as Sunstar, Pictmap and Postscript. Develops software for optical scanners. Analyzes user requirements to develop GUIs for Cylinder Composition System using the SPARC station. Develops and documents Cylinder Composition System, Electronic Color Stripping and Color Management System windows with Chinese fonts and modify these windows per customer requirements. Performs concurrent programming using C language in UNIX operating system with the following interprocess protocols. Installs and updates software and trains users in Asia for Chinese speaking companies. Provides second line technical support in Chinese for Asian customers. Travel 3 to 4 times per year for a 1 to 2 week period to Asia, including but not limited to the following countries: Peoples Republic of China, Taiwan, Singapore, Indonesia and Thailand. Must have a Masters degree in Computer Science or Computer Engineering and the following graduate courses: Microcomputer & Its Application, Precision Electrical Measurement, Theory of Matrix and Optical Computer Architecture. Must read, write and speak Chinese and have one of the following: 1) Masters Thesis in developing GUI and image processing in X-Windows with UNIX or 2) 1 academic year of graduate course researching the same or 3) 6 mos. experience developing the same and 4) 6 mos. experience in the job offered. 8:00 am - 5:00 pm, Mon-Fri., 40 hrs/wk, \$36,850.00 per year. Must have proof of legal authority to work permanently in U.S. Send resume in duplicate (NO CALLS) to G. Maguire, JOE00561, Ohio Bureau of Employment Services, P.O. Box 1618, Columbus, Ohio 43216.

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Consultant: Provide system analysis and computer programming for clients; assist with the design and technical development of computer applications; provide technical expertise in the implementation of computer applications as well as technical assistance to programmers; consult with clients regarding their particular needs and provide professional advice regarding system and application that are of particular value for clients business needs; work on a client server application using VISUAL BASIC. Six years college. Master's Degree in Computer Science required. 9 months experience in the position or 9 months as a Consultant with experience working in client server application using VISUAL BASIC required. Graduate level coursework must include one course in each of the following areas: 1) Computer Networks, 2) Advanced Database Management, 3) Algorithm Analysis, 4) Large Scale Scientific Computation. 40 hrs/week: 9:00 a.m. - 5:00 p.m. \$37,000/year. Must have proof of legal authority to work in the United States. Send your resume to Job Service Workforce Center, 215 Keo Street, Des Moines, Iowa 50309-7227. Refer to Job Order IA1100283. This advertisement is paid for by the employer.

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Consultant: Provide system analysis and computer programming for clients; assist with the design and technical development of computer applications; provide technical expertise in the implementation of computer applications as well as technical assistance to programmers; consult with clients regarding their particular needs and provide professional advice regarding system and applications that are of particular value for clients business needs. Six years college, Master's Degree in Computer Science required. 5 months experience in the position or 5 months as a Consultant with experience with PowerBuilder, Visual Basic, Access, SUPERBASE and SYBASE required. Must possess at least one graduate level course in each of the following areas: 1) Database Management, 2) Object Oriented Computing, 3) Reliability and Maintenance of Software Systems. 40 hrs./wk; 8:00 a.m. - 5:00 p.m.; \$40,000/year. Must have proof of legal authority to work in the United States. Send your resume to Job Service Workforce Center, 215 Keo Street, Des Moines, Iowa 50309-1727. Refer to Job Order IA1100284. This advertisement is paid for by the employer.

Programmer/Analyst 40 hrs./wk, 9:00 a.m. to 5:00 p.m.; \$34,300 per year; design and develop programs and thereafter perform debugging, quality testing and user acceptance testing of customer service projects. Hardware: IBM 3090 and IBM PC. Operating Systems: MVS/ESA, MVS/XA, VM/SP, DOS/VSE and UNIX. Languages & Utilities: COBOL, COBOL II, DB2, DATA-COM/DB (includes IDEAL), JCL coding, VSAM file access, RPG and BAL, (Assembler 370). Debugging tools: EZTEST. Must have a BS in computer science and two years experience in the job offered, including two years using IBM 3090, IBM PC, MVS/ESA, MVS/XA, VM/SP, DOS/VSE, COBOL, COBOL II, DB2, DATA-COM/DB, IDEAL, VSAM, file access, RPG, BAL, (Assembler 370) and EZTEST. Must have completed academic or non-academic courses covering UNIX and JCL coding. Must have proof of legal authority to work permanently in the U.S. Send resumes to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 S. State Street, - 3 South, Chicago, Illinois 60605, Attn: Ruth Daniels, Reference No. VIL 11841-Y. NO CALLS. AN EMPLOYER PAID AD - SEND TWO COPIES OF RESUME.

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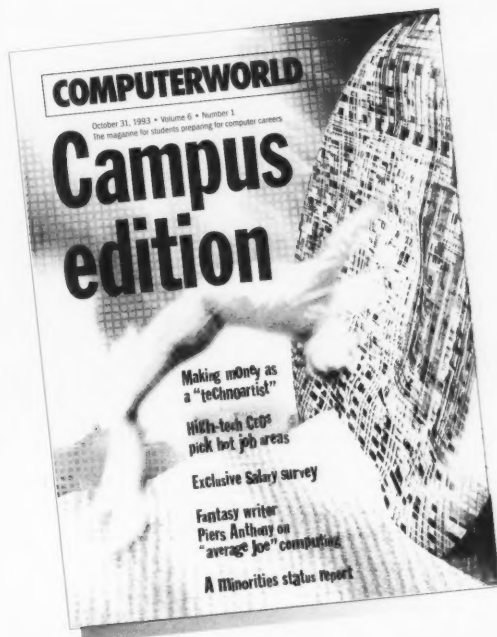
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Planned Editorial Features:

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Marketplace

THE PREFERRED METHOD

UPDATING LEGACY APPLICATIONS? Companies tend to purchase new packages rather than build their own.

By Joanne Cummings

It's time to decide. When mainframe applications no longer keep up with changing business needs, do you re-engineer or buy new ones?

Some users say buying definitely beats building. "It's much faster to install when you're buying a packaged product," says William Connor, corporate vice president and director of information technology for the General Systems Sector at Motorola, Inc. "Second, it's less expensive. And third, vendors are under heavy competition, and the quality of their products tends to reflect that."

After examining Motorola's mainframe applications, the Arlington

Heights, Ill., firm decided to replace all of them. "We are constantly re-engineering our processes to be faster, less expensive and more responsive to customers," Connor says. "When we looked at the applications running on the mainframe, most were 10, 15 or 20 years old. We thought, these things are not legacies, they're anchors."

In fact, Motorola bought 75% of the software it needed. "Our goal was to get out of the software development business to the greatest extent possible," Connor says. "We would much rather buy than make because that's not our business."

"We see the majority of users implementing shrink-wrapped applications

when they can," says Wayne Eckerson, a senior analyst at Patricia Seybold Group in Boston.

Of course, companies don't always start out with these intentions. "We [assumed] we were going to develop our applications in-house," says Peter Bates, systems vice president at Esprit de Corp. in San Francisco. "We looked carefully at what it would take to develop the systems ourselves and what the state of the art was in commercial packages. We concluded that the state of the art for commercial packages was pretty good."

"When we looked at the applications running on the mainframe, most were 10, 15 or 20 years old. We thought, these things are not legacies, they're anchors."

-William Connor, corporate vice president and director of information technology for the General Systems Sector at Motorola, Inc.

Customized concerns

Convenience and cost savings aside, buying shrink-wrapped software has its disadvantages.

"You're buying into a vendor's vision of how this function works. If it's not your vision, it may not be a good fit," Eckerson says. In such cases, "there's a big temptation to customize," he adds, which can run you into trouble when it's time to maintain and upgrade the system.

Luckily, these problems can be mitigated with some savvy footwork. "In the case of our distribution system, the vendor we selected [was] relatively new, and the system was still largely under development," Bates says. "As a consequence, we helped them design and define their second development phase. It

really maps to our requirements very precisely."

In fact, Esprit won't think twice about customizing again, Bates says. "We'll make the decision to take on the maintenance ourselves and continue to enhance it knowing that we may not be able to accept the vendor's next releases very easily," he says. "But by the time the vendor comes out with something that's dramatically better, it will be time for a systems replacement, and we'll start fresh, whether it's with that vendor or some other vendor."

Esprit also relies on a modular approach to software applications. "We're

building very robust interface mechanisms so we can plug applications in and out as readily as possible," Bates says. "So if a really slick distribution capability comes along, we can plug in a new distribution system and leave our order management and production management systems more or less intact."

When a vendor is not open to customization,

Connor says his firm adjusts its business processes to suit the software. "Oracle tends not to be very modifiable," he says. "For the Oracle financials we use, we adapted our processes to that software, and we benefited because some of the process changes were good ones."

While companies are still feeling their way around the world of distributed computing, they're sticking to conventional wisdom when determining the future of legacy applications. "I think the principles that have always been important remain important in this field," Bates says.

Eckerson agrees. "Why reinvent the wheel?" ■

Cummings is a free-lance writer in Marlboro, Mass.

When it's right

There are times when re-engineering legacy applications makes sense, but often it's the exception, not the rule.

"For the stuff we developed ourselves, we couldn't find a product that fit our requirements," says Motorola's William Connor. "Then, there's not much else you can do."

As simple as it sounds, the lack of available off-the-shelf products is often the deciding factor. "There are user companies who are re-engineering [applications], but that's when there's nothing they can buy," says Wayne Eckerson, a senior analyst at Patricia Seybold Group. "It's usually [something] like order entry, which is

really unique to companies and hard to duplicate in a package."

Connor, for example, says his firm re-engineered about 25% of its legacy applications and bought 75%. In another instance, the firm migrated its manufacturing resource planning (MRP) application off the mainframe and onto a Unix platform through the use of software tools, leaving the application virtually untouched. "The [MRP system] had been recently installed, and we didn't want to go and retrain everybody again," he says.

"My guess is that in five years' time, we'll be 90% purchased and 10% internally developed," Connor says.

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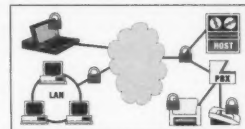
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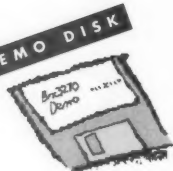
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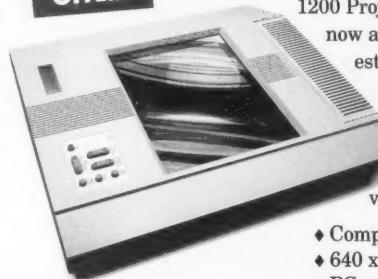
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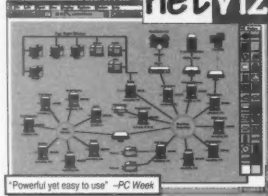
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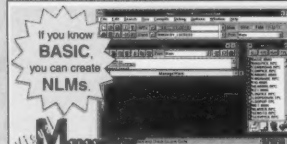
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INFORMIX CORP.	2.38	MICRON TECHNOLOGY	-3.75
GATEWAY 2000 INC.	2.00	XILINX	-3.50
DIGITAL EQUIPMENT CORP.	1.88	INTEL CORP.	-3.44
PLATINUM TECHNOLOGY	1.88	STORAGE TECHNOLOGY	-3.25

PC, WORKSTATION AND LARGE SYSTEMS STOCKS ROSE MARGINALLY AFTER LAST WEEK'S OVERALL GAIN. LOTUS DEVELOPMENT CORP. TOPPED THE LOSERS CHART FOLLOWING PROJECTIONS FOR A WEAR THIRD QUARTER.

The urge to merge

Wall Street analysts are not hiding their skepticism about the pending merger between Wellfleet Communications, Inc. (WLFT) and SynOptics Communications, Inc. (SNPX). But at the same time, they concede it is almost sure to go through.

"Management at both companies are just determined to make this merger happen," said Michael Karfopoulos, an analyst at SoundView Financial Group in Stamford, Conn. One reason is that by themselves, Wellfleet and SynOptics have less opportunity for success in the future, he said. "The networking market is becoming so different; they have to get into the new technology cycle."

Cheryllyn Blatter, an analyst at Sherwood Research Group in New York, said industry dynamics suggest the Wellfleet/SynOptics merger makes sense. "The hub and router industries are definitely integrating," Blatter said. "Xyplex, Inc. already has a routing hub, and 3Com Corp. has the capability. This merger is a positive endorsement of the industry's direction."

Less convincing is the new company's ability to compete successfully in that new industry, Karfopoulos said. Last week, the partners-to-be of Bay Networks, Inc. — the combined company's new name — outlined a business strategy that was at best full of generalities, he said.

"Not only have they not worked out into significant detail what products they will produce, they just don't say how, where or when they are going to be competitive," Karfopoulos said. In a report compiled after the briefing, he added that for at least the first year of the merger, new products will continue to come from the individual companies.

Users who want to purchase from a single vendor will not like that strategy, Blatter predicted. "Competitors Cisco Systems, Inc., Cabletron Systems, Inc. and Chipcom Corp. are all finding opportunities to snap up some of SynOptics' and Wellfleet's installed base," she said. "Users are concerned about which companies will offer the most interoperability. That translates into investors that are concerned about this merger."

Shareholders will vote on the merger Oct. 20, following a road show earlier in the month. While the companies hope to rally investor support, they can be assured that most opponents are already out of the picture, Blatter said. "When this deal was first announced, both companies' stock immediately declined," she said. "Since then, the investors who had doubts just got out." — *Erin Callaway*

52-WEEK RANGE	SEPT. 23/94 NET W/L PCT	3PM	CHANGE	EXCH	52-WEEK RANGE	SEPT. 23/94 NET W/L PCT	3PM	CHANGE
Communications and Network Services				OFF 1.34%				
OTC 37.25 13.50	3 COM CORP.	37.25	0.88 +2.4	OTC 34.75 17.50	LEGENT CORP.	24.38	0.13 0.5	
NYS 44.88 16.25	AMERITECH CORP.	44.88	0.88 +2.4	OTC 86.50 29.75	LOTUS DEVELOPMENT	36.50	-6.38 -14.9	
NYS 61.38 49.50	AT&T	54.13	-0.88 -1.6	OTC 18.00 6.00	MAGIC SOFTWARE ENTERPRISES	9.44	-0.94 -9.0	
OTC 26.50 12.75	BANYAN SYSTEMS INC.	16.75	0.00 0.0	OTC 18.50 6.00	MANUQUEST GROUP INC.	8.75	0.00 0.0	
OTC 36.15 13.00	BELL ATLANTIC CORP.	51.75	-0.50 -0.9	OTC 7.50 1.44	MATHSOFT	2.75	-0.25 -8.3	
NYS 63.88 53.00	BELLSOUTH CORP.	55.50	-1.88 -3.3	OTC 11.25 4.50	MCAE ASSOCIATES	0.06	-0.31 -7.7	
NYS 21.50 8.38	BOLT, BERANEK & NEWMAN	16.13	-2.50 -13.4	OTC 11.63 4.63	MICROFICHE INC.	5.50	-0.25 -4.3	
OTC 15.75 9.00	BROOKTRUST TECHNOLOGY	11.25	0.25 2.3	OTC 59.25 37.38	MICROSOFT CORP.	56.50	-0.56 -1.0	
OTC 73.00 33.06	CABLETRON SYSTEMS	44.88	-2.50 -5.3	OTC 44.38 26.19	ORACLE CORP.	43.38	-0.75 -1.7	
OTC 43.00 10.00	CENTIGRAM COMMUNICATIONS	15.00	-1.50 -9.1	OTC 44.75 21.50	PARAMETRIC TECHNOLOGY	28.25	-2.50 -8.1	
OTC 60.25 31.50	CHIPCOM CORP.	56.50	-1.00 -1.7	OTC 24.50 13.38	PANPLACE SYSTEMS INC.	19.25	-1.75 -8.3	
OTC 40.75 18.75	CISCO SYSTEMS INC.	24.50	-1.50 -5.8	OTC 48.25 26.00	PEOPLESOFT	43.50	0.88 2.1	
OTC 18.38 9.25	COMPRESSION LABS INC.	9.88	-0.63 -6.0	OTC 6.25 3.50	PHOENIX TECHNOLOGIES	5.88	0.38 6.8	
OTC 12.38 5.13	COMPUTER NETWORK TECH.	8.00	-0.25 3.2	OTC 69.50 26.25	POWERSOFT	48.75	-4.25 9.6	
OTC 33.75 8.50	CROSSCOM	9.50	-0.75 -7.3	OTC 39.75 3.50	PLATINUM SOFTWARE	10.00	-0.44 10.3	
OTC 3.00 1.50	DATA SWITCH CORP.	2.50	0.13 5.3	OTC 20.50 7.25	PLATINUM TECHNOLOGY	20.50	1.88 10.1	
OTC 36.56 17.88	DSC COMMUNICATIONS	28.50	-2.13 -6.9	OTC 26.05 27.00	PROGRESS SOFTWARE CORP.	32.75	-0.88 -2.6	
NYS 29.50 8.25	GENERAL DATA COMM. INDS.	29.50	0.75 2.6	OTC 4.13 1.94	QUANTERIDGE OFFICE SYS.	7.25	-0.25 -10.0	
NYS 39.88 29.50	GTE CORP.	30.38	-1.13 -0.4	OTC 26.75 9.50	RAINBOW TECHNOLOGIES INC.	12.38	-0.13 -1.0	
NYS 95.97 78.63	ITT CORP.	80.63	-1.00 -1.2	OTC 10.50 3.38	RASTEROPS	1.50	-0.75 -6.7	
OTC 29.63 21.38	MCI COMMUNICATIONS CORP.	21.63	-0.75 -3.1	OTC 14.50 2.88	ROSS SYSTEMS	16.1	0.00 0.0	
OTC 8.25 2.38	MICROMIN	7.38	-0.50 -6.3	OTC 28.63 2.75	SAPIENS INTL. CORP. N.V.	4.13	-0.75 -15.4	
OTC 23.50 11.25	NETMANAGE INC.	21.00	-0.50 -2.3	OTC 14.63 9.75	SOFTKEY INTERNATIONAL INC.	13.38	-0.61 -4.5	
OTC 7.25 4.00	NETRIP CORP.	4.75	-0.13 -2.6	OTC 30.00 11.25	SOFTWARE PUBLISHING CORP.	6.50	0.50 8.3	
OTC 8.75 3.38	NETWORK COMPUTING DEVICES	3.75	-0.13 -3.2	OTC 11.00 5.00	STAFF OF THE ART	40.00	1.38 4.9	
NYS 14.88 3.38	NETWORK EQUIPMENT TECH.	14.00	-0.25 -1.8	NYS 35.63 21.88	STERLING SOFTWARE INC.	30.00	1.38 -4.4	
OTC 23.38 11.88	NETWORK GENERAL	17.75	-1.69 -8.7	OTC 19.88 8.75	STRUCT DYNAMICS RESEARCH	72.88	-5.00 -6.1	
OTC 9.63 6.38	NETWORK SYSTEMS CORP.	8.00	-0.63 -7.2	OTC 57.00 27.38	SYBASE INC.	49.50	1.38 2.9	
OTC 72.25 26.50	NEWBRIDGE NETWORKS CORP.	31.88	0.00 0.0	OTC 20.50 9.88	SYNTEC CORP.	15.38	-0.38 -2.4	
OTC 76.00 21.75	NORTECH TELECOM LTD.	34.63	-1.00 -2.9	OTC 52.75 10.00	SYNOPSIS	46.50	-0.50 -1.1	
OTC 26.63 13.38	NOVELL INC.	14.50	-1.00 -6.5	OTC 18.00 11.75	SYSTEM SOFTWARE ASSOC.	13.50	0.25 1.9	
NYS 48.88 33.25	NYNEX CORP.	37.13	-0.63 -1.7	OTC 6.75 3.25	TRINIC CORP.	3.88	0.25 6.6	
OTC 30.00 15.50	OCTEL COMMUNICATIONS CORP.	21.13	-0.88 -4.0	OTC 30.00 11.75	VIEWLOGIC SYSTEMS	26.50	-1.50 -5.4	
OTC 18.75 9.00	OPTICAL DATA SYSTEMS INC.	17.75	-1.00 -5.3	OTC 23.25 12.00	VIMARK SOFTWARE INC.	21.38	1.13 5.6	
OTC 7.50 3.13	PENRILL DATA COMM NETWORKS	3.88	0.13 3.3	OTC 13.25 6.00	WALKER INTERACTIVE SYSTEMS	7.19	0.19 2.7	
OTC 20.75 10.00	PICTURETEL CORP.	15.50	-2.00 -11.4	OTC 60.00 29.50	WALDATA INC.	30.25	-1.50 -4.7	
OTC 8.25 2.13	PROTECH INC.	3.75	-0.38 -9.1	Semiconductors				
OTC 14.38 2.75	RACOTEK INC.	4.00	-0.13 -3.0	OFF 1.32%				
NYS 45.00 24.88	SCIENTIFIC ATLANTA INC.	42.50	-1.75 -4.0	NYS 31.75 16.75	ADVANCED MICRO DEVICES	30.00	0.50 1.7	
NYS 45.25 36.75	SOUTHWESTERN BELL CORP.	40.88	-0.43 -1.5	NYS 33.88 19.38	ANALOG DEVICES INC.	30.88	-0.88 -2.8	
NYS 40.25 31.38	SPRINT CORP.	38.38	-1.00 -2.5	OTC 30.56 10.94	ATHEL CORP.	30.56	0.31 1.0	
OTC 26.75 13.38	STANDARD MICROSYSTEMS CORP.	26.38	-1.38 -6.3	OTC 7.50 1.63	CHIPS AND TECHNOLOGIES	6.38	-0.38 -5.9	
OTC 42.75 12.13	STRATACOM INC.	37.63	-0.88 -13.5	OTC 44.63 24.88	CHRUSLOG	27.25	-2.38 -8.0	
OTC 33.75 13.13	SYNOPSIS COMMUNICATIONS	14.75	-1.00 -6.3	NYS 20.00 11.25	CYPRESS SEMICONDUCTOR CORP.	19.13	-0.88 -4.6	
OTC 15.25 1.88	TELEBIT CORP.	5.50	0.28 5.4	OTC 20.13 13.00	DALLAS SEMICONDUCTOR	19.13	-0.88 -4.6	
OTC 46.00 23.00	US FORNIX CORP.	33.00	-2.63 -7.4	OTC 27.75 14.75	INTEGRATED SILICON SYSTEMS	26.50	-1.50 -5.4	
NYS 50.75 38.25	US WEST INC.	38.38	-1.13 -2.8	OTC 74.50 55.98	INTEL CORP.	63.31	-4.44 -5.1	
OTC 43.88 18.75	WELLFLEET COMMUNICATIONS	20.56	-1.56 -7.1	OTC 15.00 6.50	LSI LOGIC CORP.	18.88	-0.63 -3.2	
OTC 28.25 12.75	XIRCOM	20.00	-0.50 -2.6	NYS 35.25 13.00	LSI LOGIC CORP.	35.25	0.13 0.4	
OTC 26.13 13.25	XYLOGICS INC.	26.13	2.38 10.0	OTC 76.25 12.25	LATTICE SEMICONDUCTOR	38.25	-3.75 -9.8	
OTC 29.25 11.25	XYPLEX INC.	27.75	0.00 0.0	OTC 26.75 12.25	MICRON TECHNOLOGY	44.88	0.00 0.0	
PCs and Workstations				OFF 0.38%				
OTC 7.50 2.63	ADVANCED LOGIC RESEARCH	4.25	0.13 3.0	NYS 25.00 14.38	NATIONAL SEMICONDUCTOR	15.75	-0.75 -4.5	
OTC 38.50 22.00	APPLE COMPUTER INC.	34.13	-2.75 -7.5	OTC 14.25 6.75	SILICON GRAPHICS	13.25	-0.13 -0.9	
OTC 33.00 12.00	AST RESEARCH INC.	13.88	-0.13 -0.9	OTC 26.75 15.75	TEXAS INSTRUMENTS	26.75	-0.50 -1.9	
NYS 39.38 18.41	COMPAQ COMPUTER CORP.	34.63	-3.00 -8.0	OTC 10.38 5.38	TECHNICAL SYSTEMS	7.28	-0.88 -12.4	
OTC 38.38 15.13	DELTA COMPUTER CORP.	38.38	0.88 2.3	OTC 20.38 4.63	WESTERN DIGITAL CORP.	14.88	-1.13 -7.0	
OTC 25.00 9.25	GATEWAY 2000 INC.	19.13	-2.00 -11.7	OTC 9.75 29.00	XILINX	46.50	-0.50 -1.0	
NYS 93.63 64.38	HEWLETT PACKARD CO.	86.63	-4.38 -4.8	OTC 40.75 26.50	ZILOG INC.	33.75	0.25 0.7	
NYS 36.88 18.75	SILICON GRAPHICS	24.13	-2.50 -10.0	Peripherals and Subsystems				
OTC 31.38 18.25	SUN MICROSYSTEMS INC.	28.75	0.63 2.2	OFF 1.80%				
OTC 50.75 30.75	TANDY CORP.	42.63	-0.13 -0.3	OTC 30.50 14.50	AMERICAN POWER CONVERSION	19.75	0.00 0.0	
OTC 5.13 2.38	ZEOS INTERNATIONAL LTD.	3.00	0.00 0.0	OTC 26.25 18.75	BANCTEC INC.	26.00	-0.25 -1.0	
Large Systems				UP 0.41%				
ASE 10.25 4.38	AMDAHL CORP.	8.63	-0.63 -6.8	OTC 7.75 3.25	CAMBER CORP.	4.31	0.19 4.5	
NYS 8.13 4.25	CONVEX COMPUTER	8.00	-0.25 -3.0	OTC 14.00 3.50	CINEMATICS CORP.	2.50	0.13 5.3	
OTC 42.50 0.50	CRAY COMPUTER	1.22	-0.09 -1.2	OTC 7.50 1.00	COMPAR PERIPHERALS	10.50	-0.63 -5.6	
NYS 33.75 19.13	CRAY RESEARCH INC.	20.88	-0.13 -0.6	NYS 23.00 12.38	COGNITIVE TECHNOLOGIES INC.	17.50	-1.22 -6.5	
NYS 10.75 6.63	DATACORP CORP.	9.38	-0.50 -5.1	OTC 9.88 3.13	EMULEX CORP.	9.50	0.00 0.0	
OTC 19.13 18.25	DIGITAL EQUIPMENT CORP.	17.75	-1.88 -7.5	OTC 11.75 1.88	EVANS & SUTHERLAND	7.28	-0.88 -12.4	
OTC 6.38 2.38	ENCORE COMPUTER CORP.	4.63	-0.63 -15.6	OTC 22.50 8.75	EXARTE	20.13	1.63 8.8	
NYS 52.25 40.38	HARRIS CORP.	48.13	-0.50 -1.0	OTC 28.50 2.63	INTELLIGENT INFO. SYSTEMS	4.25	-0.50 -10.5	
NYS 70.13 41.25	IBM CORP.	68.88	-2.50 -3.5	OTC 14.38 2.00	IONEMA CORP.	3.25	0.19 -5.5	
OTC 18.75 7.75	NETFRAME	10.75	-0.25 -2.3	OTC 9.75 3.00	IPL SYSTEMS INC.	3.50	0.00 0.0	
OTC 26.00 3.88	PARALLAN COMPUTER	5.00	0.50 11.1	OTC 28.50 13.75	KOMAG INC.	23.25	-1.75 -7.0	
OTC 22.00 5.38	PARTECH CORP.	5.38	-0.13 -2.4	OTC 14.25 8.75	MATROX CORP.	4.25	0.13 3.0	
OTC 20.00 11.13	SEQUENT COMPUTER SYS.	17.63	0.13 0.7	OTC 8.75 4.88	MICROPOLIS CORP.	6.75	-0.63 -10.5	
OTC 6.84 2.25	SEYDIA SYSTEMS INC.	4.88	-0.13 -2.5	OTC 22.50 10.25	PHINIA MICRO INC.	13.50	0.25 1.9	
NYS 38.63 22.88	STRATACOM INC.	37.00	-0.88 -2.3	OTC 20.25 6.50	PHOTONICS INC.	17.00	-1.75 -9.3	
NYS 16.38 10.00	TANDY COMPUTERS INC.	15.63	0.13 0.8	OTC 11.75 6.88	QMS INC.	9.25	-0.63 -6.3	
OTC 30.00 3.88	TRICORP SYSTEMS	5.44	0.06 1.2	OTC 20.25 9.38	QUANTUM CORP.	10.88	-1.50 -9.2	
NYS 16.50 8.63	UNISYS CORP.	10.94	0.19 1.7	OTC 10.00 3.63	RADIOS INC.	10.00	0.00 0.0	
Software				UP 1.72%				
OTC 34.50 16.50	ADBE SYSTEMS INC.	32.63	-2.25 -6.5	OTC 6.75 3.75	RECON INC.	4.88	0.13 2.6	
OTC 8.13 4.38	AMERICAN SOFTWARE INC.	4.63	-0.25 -5.1	OTC 28.75 16.25	SEAGATE TECHNOLOGY	23.38	-1.38 -5.6	
OTC 15.75 6.75	ASK COMPUTER SYSTEMS INC.	13.13	0.09 0.7	NYS 13.75 13.75	STORAGE TECHNOLOGY	31.63	-1.25 -3.9	
OTC 66.00 37.00	AUTODESK INC.	61.63	-0.13 -0.2	NYS 38.00 21.38	TECHTRONIX INC.	38.00	-0.13 0.3	
OTC 3.88 1.75	BACHMAN INFO. SYSTEMS	2.38	0.13 5.6	OTC 103.88 12.5	TERA-12	103.88	-1.25 -1.2	
OTC 28.25 20.50	BGS SYSTEMS INC.	24.75	0.63 2.6	Services				
OTC 71	BMC SOFTWARE INC.	17.40	-3.00 -6.6	OTC 27.25 16.50	AMERICAN MGMT. SYSTEMS	23.13	-2.25 -8.9	
OTC 30.75 12.50	BODOL & BARBAGE	10.75	-0.00 -6.4	NYS 4.25 2.50	ANAPAC INC.	2.75	-0.13 -4.3	
OTC 18.25 8.50	BORLAND INT'L INC.	10.88	-1.44 -11.7	OTC 23.50 14.50	ANALYST INT'L	16.50	-1.75 11.9	
OTC 25.00 6.75	BROCK CONTROL SYSTEMS INC.	9.50	-0.50 -5.0	NYS 56.88 47.63	AUTO DATA PROCESSING	54.63	-1.50 -2.7	
OTC 9.38 4.38	CE SOFTWARE	4.63	-0.13 -2.8	OTC 11.25 11.25	CHAMBERLAIN TECH. PARTNERS	11.25	0.00 0.0	
ASE 30.34 6.25	CHEYENNE SOFTWARE INC.	10.75	-0.75 -6.5	NYS 27.50 17.00	CERIDIAN CORP.	25.63	-1.00 -3.8	
OTC 14.25 3.38	COGNOS INC.	11.75	-0.50 -4.1	NYS 24.25 15.75	COMDISCO INC.	21.50	0.00 0.0	
OTC 20.00 27.38	COMPUTER ASSOCIATES	14.00	-0.75 -4.1	OTC 6.75 6.75	COMPTON PERIPHERALS	6.75	-0.63 -9.3	
NYS 5.38 2.13	COMPUTERVISION CORP.	2.75	0.13 4.8	NYS 45.25 29.38	COMPTON SCIENCE	43.25	0.00 0.0	
OTC 48.25 21.00	COMWARE CORP.	44.63	-0.06 -0.1	NYS 10.38 6.38	COMPUTER TASK GROUP INC.	9.00	-0.75 -7.7	
OTC 16.25 11.25	CORPUS COMMUNICATIONS	13.50	-0.50 -8.0	OTC 6.75 6.75	CONQUEST INC.	6.75	-1.00 -10.2	
OTC 20.50 14.88	COREL CORP.	18.75	-1.25 -6.3	OTC 12.75 6.38	CONTROL DATA SYSTEMS INC.	7.00	-0.25 -3.4	
OTC 7.13 2.88	EASEL CORP.	4.31	-0.31 -7.0	OTC 11.00 6.13	EDGEHARD DISCOUNT SOFTWARE	7.13	0.00 0.0	
OTC 29.25 13.00	ELEMENTAL SYSTEMS INC.	23.50	-1.13 -4.8	OTC 26.50 15.50	GENERAL MICROSYSTEMS (EDS)	36.50	-1.50 -4.1	
OTC 2.50 3.00	4th DIMENSION	6.75	0.50 -8.0	OTC 21.00 7.25	INACORP INC.	9.00	0.00 0.0	
OTC 14.88 7.25	FRAME TECHNOLOGY	14.88	-0.13 -0.8	OTC 20.80 13.63	INTELLIGENT ELECTRONICS	11.63	-1.63 -9.2	
OTC 11.00 7.00	GROUP SOFTWARE	8.00	0.00 0.0	OTC 22.50 7.00	INTERSECT	12.50	-1.25 -10.0	
OTC 6.75 3.25	GUPTE INC.	6.75	-0.25 -3.5	OTC 9.25 9.25	MICROAGE INC.	13.75	-1.75 -11.3	
OTC 12.00 5.88	HUGHES SYSTEMS INC.	6.88	0.25 3.8	OTC 40.50 28.50	PAYCHEX	36.00	3.25 9.9	
OTC 36.25 17.00	IMRS	36.25	0.00 0.0	NYS 40.00 22.25	PLYMOUTH MANAGEMENT SYS.	40.00	-0.13 0.3	
OTC 11.50 11.50	INFORMATION RESOURCES	10.88	-0.38 -3.3	OTC 18.88 10.38	REYNOLDS AND REYNOLDS	18.88	-0.13 0.3	
OTC 25.63 14.25	INFORMIX CORP.	25.63	-2.38 10.2	OTC 28.50 17.00	SHAR CORP.	21.25	-1.00 -4.5	
OTC 11.25 8.75	INTERGRAPH CORP.	8.75	-0.69 -7.3	OTC 29.38 20.88	SHARED MEDICAL SYSTEMS	28.00	-0.25 0.9	
OTC 2.50 2.50	INTERLINK CORP.	4.50	-0.25 3.3	OTC 6.88 6.88	SILICON SYSTEMS INC.	6.88	0.00 0.0	
OTC 15.50 7.50	INTERSOFT INC.	12.63	-0.38 -2.9	OTC 25.50 9.25	SUNFARM SPECTRUM INC.	13.75	-0.38 -2.8	
OTC 50.00 27.00	INTUIT INC.	29.75	-0.88 -2.2	OTC 42.75 31.50	SUNFARM DATA SYSTEMS	37.50	-3.38 -8.8	



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- Digital Media Convergence
- Information Highways: Data Management - A Question of Volume?
- Information Infrastructures: Is Europe Missing the Boat?
- Business Re-engineering and Process Innovation
- Managing Internetworks Complexity
- The Distribution Issue: Can you use the Consumer Model?
- Information Highways: Costs versus Benefits
- The User Focus: Information Highways - Who Needs Them?

Key Speakers Include:

Carlo De Benedetti, Chairman and CEO, Olivetti
Eric Benhamou, Chairman and CEO, 3Com Corporation
Mike Grubiner, Director, BT Europe
Gerhard Schulmeyer, Chairman and CEO, Siemens Nixdorf Informationssysteme AG
Jean-Marie Descarpentries, Chairman and CEO, Bull
Pier Paolo Davoli, CEO, Finisiel
Gary Fernandes, Senior Vice President, EDS
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Information highway measures split camps

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monopolies.

While users last week naturally voted in favor of the openness stressed by the group led by Sun, they were underwhelming in their support for the government role Sun seemed to advocate. "Either way, business will demand openness," said Wayne Gacnik, corporate director of MIS at The Sherwin Williams Co. in Cleveland. "But I think we will get there faster letting business do it."

Legislative delay

On Friday, Sen. Fritz Hollings (D-S.C.), the bill's sponsor, announced he would not bring the legislation to the Senate floor in this legislative session. But the bill is likely to resurface next year.

The IBM/Apple/Microsoft axis argues that proprietary interfaces can still be "open" — that is, ensure interoperability among network devices and services — as long as specifications for them are available on "reasonable terms and conditions" to all competing vendors. It also argues that such open standards may be protected as intellectual property by copyright or patent.

CEMA is urging the adoption of amendments proposed by Sen. Patrick Leahy (D-Vt.) that would strictly limit the regulatory oversight of the Federal Communications Commission to three interfaces critical for interoperability. These physical device interfaces would be located where equipment connects to the public network — for example, between a fax machine and a telephone switch. These interfaces would also be found where information service providers connect to the public net-

work and where public networks connect to one another.

In all other cases, standards should be set by the private sector alone, the coalition maintains.

From the opposing side, Sun, Oracle and their supporters say no one person or company should own the rights to interface specifications on the NII. "Companies sometimes claim to have built intellectual property into an interface specification itself," said Eric Schmidt, chief technology officer at Sun. "Then they limit access to the specification to keep out competitors."



Sun's Eric Schmidt:
Open interfaces are key to enabling the NII's vast potential

Schmidt said Sun is not seeking government-mandated interface standards but favors the broader government oversight contained in the Senate bill without the Leahy amendments.

The bill would have the FCC undertake a comprehensive study to determine where interfaces critical for interoperability exist. These interfaces should then be made open — in other words, their specifications made available to anyone free of charge or, if copyrighted, for a "nominal royalty," Schmidt said. Such a study is mandated in the House version of the bill.

Evolution by consensus

Schmidt said the standards for all interfaces found by the FCC to be critical for interoperability should evolve as did the TCP/IP networking protocols — by consensus among many parties and ownership by none.

Gacnik said he endorsed Sun's strong emphasis on open interfaces, but he balked at assigning any major role to the FCC. "We have 2,300 Unix [machines], so we reap the benefits

The Communications Act of 1994 would:

- Set terms for entry of regional Bell telephone companies into long-distance markets.
- Permit telephone companies to compete against cable TV companies after opening and unbundling their local networks.
- Within a year, preempt most state and local barriers to competition in local telephone markets.
- Require all carriers to open and unbundle their network components so users and other carriers may interconnect with telephone company facilities.
- Require all carriers, not just telephone companies, to contribute to a universal service fund.
- Require the regional Bell companies to set up separate, "arms-length" subsidiaries for their electronic publishing services.
- Lift the manufacturing restrictions on the regional Bell companies.
- Provide for the entry of electronic utilities into telecommunications markets.

"Despite its billing, the Communications Act of 1994 falls short of providing the deregulation essential to development of the 'information superhighway.' [It] would require some 50 new rule-making proceedings and delay for years increased competition in the telecommunications industry."

—Beverly McKiltrick
Telecommunications counsel
Citizens for a Sound
Economy Foundation

of openness," he said. "But we tend to want to keep the government out because they are so slow. We should let business and the free market determine these interfaces."

Gacnik said he had "no problem" with the notion that standards can be open yet proprietary. "Most of our standards are proprietary; Unix is a proprietary standard," he said.

"Sun says proprietary technology, by definition, means a company has a monopoly," said Ted Heydinger, vice president for government relations at CEMA in Washington. "But there are thousands of proprietary open standards. The classic example is the phone jack that permits the consumer to [plug in to] the public switch network. It is patented but plainly open."

Eric Singleton, director of information systems at AlliedSignal Technical Services Corp. in Columbia, Md., said he was not too worried about monopolies. "The free market can take care of itself," Singleton said. "Competition by itself will make these things very affordable."

Mobile users to get host PC link

CONTINUED FROM PAGE 1

The product can be used in conjunction with other wireless LAN products from Zenith Data, such as its recently shipped CruiseLAN/Access Point card, to increase wireless coverage, sources said. The cards, which serve as a sort of wireless LAN bridge, can be linked together to provide transparent cell-to-cell roaming.

"We certainly have a [use] for something like that," said Barry Larson, bureau director at the Wisconsin Department of Transportation in Madison. He envisions project and site engineers working on-site at construction projects and being able to tap into their desktop PCs to connect to the central project office.

"Sometimes engineers get into situations when they may have to make changes in the field that need clearance from the central office," Larson said. This device would make that possible right at the construction site.

Adjustment ahead

For users such as Chad Pearce, vice president of IS at Godwins, Boone and Dickenson in Philadelphia, the new systems "sound very interesting." However, he said right now "the products are ahead of the curve. It's going to take some time for desk-centric users to get used to

the idea of a mobile device like that."

"Devices like these provide a mobile window to your desktop host. The key is that it connects back to the PC," which is what sets it apart from standard personal digital assistants (PDA), said Randal Giusto, a senior industry analyst at BIS Strategic Decisions in Norwell, Mass.

Deep in the lab

Zenith's high-performance wireless LAN device at a glance:

WHAT IT IS

- A handheld, pen-based, tablet-size, high-performance, wireless LAN device

WHAT IT PROVIDES

- Mobile access to the data on a LAN-based desktop host anywhere in the campus
- Virtually unlimited roaming capability within the campus
- Ability to send, receive and manipulate data from the host computer

WHAT IT IS NOT

- A personal digital assistant, which is mainly a handheld communications device
- A collaborative whiteboard — used mainly by two or more remote users to simultaneously annotate graphics files and scanned images

Unlike typical PDAs, which offer a growing range of communication capabilities such as fax, paging, E-mail, notepad and personal information management, the Zenith Data device actually allows mobile users to access the functionality of their desktop PCs.

Varied uses

Such a device would also be suited for delivering connectivity at sites where running physical cables is not feasible — at quick workgroup setups and at places such as hospitals or large project sites, analysts said.

"Just like whiteboard technology, though, this will definitely have to go through an early adopter stage," particularly as users try to choose from the plethora of similarly positioned and performing mobile computing devices that have begun to hit the market, Giusto predicted.

In fact, the Zenith Data product is expected to be the first in a line of similar products scheduled to be announced by year's end, analysts said. Hewlett-Packard Co., for example, is also expected to announce a similar mobile device around the Comdex time frame, said analysts briefed on the company's plans.

"Right now there's a lot of interest in wireless LANs. What vendors need to do is find niches that would need these products," said Jennifer Munson, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H.

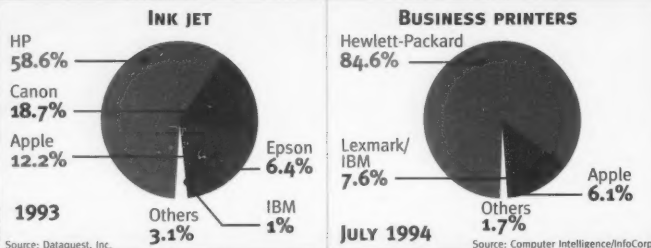


Zenith Data's mobile device, developed by the company's newly formed Mobile Systems Group, will be the group's fourth wireless LAN product announced this year. Last week, the company announced that it had started shipping its CruiseLAN/PCMCIA and CruiseLAN/ISA 16-bit adapters, which provide wireless connectivity for a radius of up to 500 feet in office environments and up to 1,000 feet in open spaces.

Overview

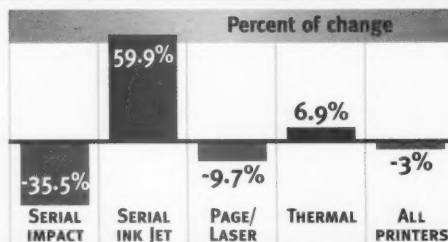
INDUSTRY PULSE: Printers

Market share: Hewlett-Packard dominance



Sales comparison: Second-quarter 1993 vs. second-quarter 1994

Printer sales have remained flat throughout 1994, with business making do with its existing models



North American printer market forecast

The strongest growth area is the ink-jet printer, which currently accounts for 33% of all printer sales but will rise to nearly 60% by 1998. By that time, 80% of all ink-jet printers will be color-capable.



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Inside Lines

Seeing Eye2eye

The Santa Cruz Operation subsidiary Ixi Corp. plans to announce a desktop interface this week that links PC clients to the Internet and to Unix servers. Called Eye2eye, the graphical desktop builds on Ixi's Wintif 1.2 GUI, which runs the Open Software Foundation's Motif applications on top of Windows. It uses an intelligent software agent to import Unix data to run on Windows PCs. The \$595 product will ship on Sun Microsystems and SCO Unix servers in November, Ixi said.

Last minute reprieve?

Digital CEO Robert Palmer told attendees at the DECUS European Symposium earlier this month that Oracle is contractually obligated to enhance Rdb for the next three years and to support it for the next seven, according to Terry Shannon, an analyst at Illuminata in Hollis, N.H. Oracle purchased the database from Digital earlier this month but at the time declined to specify time frames.

Watch those numbers

Microsoft is apparently counting Windows for Workgroups as a network operating system in order to make the claim that it has more installations than Novell. Wrong. While Windows for Workgroups is a peer network operating system, comparatively few sites are using it that way. Our source expects Microsoft to include peer networking in DOS next. "Then they'll really dominate the [network operating system] market," the source said.

Reach out and touch already

IBM and Apple are edging closer to an agreement on the Hardware Reference Platform that would enable several operating systems to run on both IBM's and Apple's PowerPC-based systems. Executives from the companies are expected to announce shortly before Comdex/Fall '94 "exactly what the common specification will be and clarify what each of their strategies will be," said one source close to both companies.

How low can they go?

Cray Research plans this week to introduce a new version of its low-end supercomputer with three times the peak performance of the EL90 model. The 16-processor J916 is priced from \$225,000 to about \$2 million and will ship in January, Cray said. The company is trying to broaden its presence in industrial markets to help make up for the flat sales of its high-end supercomputers. Larger J90 systems will be added during the first half of next year.

HP's post-RISC man

Hewlett-Packard has assigned the head of its minicomputer operations, Rich Sevcik, to the full-time task of overseeing the company's "post-RISC" chip initiative with Intel. Sevcik last week said HP has begun discussions with Microsoft, Novell and "the key database and application vendors" to facilitate migration to the .2-micron chip.

Chief Silly Walk Officer?

If you catch your CIO howling like a wolf or wearing a clown nose, don't call the people in the white coats. The boss may have just returned from the Society for Information Management's annual conference. Such bizarre behavior, called "humarobics," was taught to conference attendees by business humorist C. W. Metcalf.

Monty Python fanatics finally have a reason to go on living. More than 20 years after the Flying Circus ceased production, 7th Level in Richardson, Texas, is set to release 'Monty Python's 'Complete Waste of Time,' a CD-ROM-based collection of animations, songs, games and screen savers from the silly series. The \$59.95 CD will be sold in stores and finer cheese shops everywhere, or it can be exchanged for your body weight in Spam. To get in touch with Computerworld about news items or tips, call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Maryfran Johnson can be reached by phone at (508) 820-8179, via the Internet at mjohnson@cw.com or through MCI Mail at 590-8017.

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